AMERICAN AVIATION

March 9, 1959

Second Annual Army Aviation Issue

REFERENCE COPY

RECEIVED
9 MAR 1959
ARMY LIBRARY
SERIAL RECORD

Bell's HU-1A Iroquois

First all-Army 'copter

Accessory power problems?

There is a SUNDSTRAND solution

Constant Speed Drives

Controlled Speed Motors

Precision Gearing and Gearboxes

High Temperature Motors

Automatic Paralleling Controls—Frequency and Load Controllers

SUNDSTRAND has delivered 25,000 constant speed accessory drives in support of 36 major aircraft and missile programs. Over 6,000,000 drive flight hours prove their dependability.

SUNDSTRAND'S constant speed accessory systems provide: dependable 400-cycle a-c power in ranges from 1 to 90 kva . . . precision frequency control ±.1% down to ± .025% . . . increased effective output of hydraulic pumps.

Whatever the accessory power need . . . Primary, Secondary, or Emergency . . . see SUNDSTRAND.

SUNDSTRAND AVIATION

Division of Sundstrand Machine Tool Company
2429 Eleventh Street, Rockford, Illinois

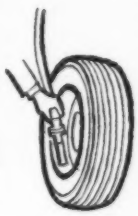
District Offices in: Arlington, Texas; Hawthorne, California; Rexdale, Ontario; Rockford, Illinois; Seattle, Washington; Stamford, Connecticut; Washington, D.

Circle No. 1 on Reader Service Card.

From Goodyear Engineering Leadership–

4 major advances in aviation tires

1. ANNOUNCING – DURABOND BALANCING! Patented new Goodyear process with exclusive grit-blasting equipment ensures lasting adhesion of balancing compound *inside* the tire – perfect balance *outside*. Self-curing compound dries to smooth, even finish – will not flake, peel, crack or deteriorate – becomes an integral part of tire.



2. NEW REINFORCED RETREADING! Through the use of fabric-reinforced treads – and thanks to its long experience in making high-speed fabric tires for the military – Goodyear is now qualified to retread jet airliner tires to *new tire specifications*. Rigid quality control, extensive testing and expert tire engineering – available only when you retread tires *at the factory* – assure complete dependability.

3. COMING – GIANT DYNAMOMETER capable of speeds to 320 mph, with auxiliary equipment to 500 mph. Representing an investment of nearly $2 million by Goodyear, dynamometer will be the most advanced in the industry – providing exact data that will qualify tires for the highest-performance aircraft of the foreseeable future.

4. ASSURED – OPTIMUM PERFORMANCE by most exacting quality-control measures that pretest bead steels, rubber compounds, body cords – *all* materials that go into Goodyear Aviation Tires. This million-dollar facility evaluates all materials for their individual characteristics and compatibility with other components – during production and after products are finished.

WRITE TODAY for detailed information on these significant new developments. The address: Goodyear, Aviation Products Division, Akron 16, Ohio, or Los Angeles 54, California.

AVIATION PRODUCTS BY

GOODYEAR

MORE AIRCRAFT LAND ON GOODYEAR TIRES, WHEELS AND BRAKES THAN ON ANY OTHER KIND

NEW VOUGHT CRUSADER FOR FLEET NEXT YEAR!

Navy orders fourth version of flexible, economical fighter

For the fourth time in three years, a new *Crusader* type is extending the power of the Fleet. Chance Vought's F8U-2N has been ordered by the Navy for delivery next year. It will deploy alongside the Navy's swiftest photoplanes and two first line day fighters – all *Crusaders*.

The F8U-2N is another step in *Crusader* growth. Speed of this newest version has been advanced to near Mach 2. It will carry the deadliest air-to-air missiles. It is instrumented and radar-equipped for supersonic combat in darkness or bad weather.

This will be a new capability for the Fleet. Yet it is being acquired at low risk and cost. The F8U-2N's basic design has been proved simple, serviceable and economical . . . compiling an enviable performance record in a year of foreign duty with two Fleets.

Again, the growth provisions of the Vought *Crusader* have provided immediate, low-cost upgrading of the Fleet's aircraft inventory.

CHANCE VOUGHT AIRCRAFT
INCORPORATED · DALLAS, TEXAS

Circle No. 3 on Reader Service Card.

AMERICAN AVIATION

March 9, 1959—Vol. 22, No. 21

Wayne W. Parrish .....Editor and Publisher
Joseph S. Murphy .....Executive Editor
Eric Bramley .....Chief News Editor

DEPARTMENT EDITORS

DeWitt Ballew .....Business News
Betty Oswald .....Defense
Bill Combs .....Engineering
Robert Burkhardt .....Transport
Mel Sokol .....Airports
Richard Golden .....CAB
Charles Schaeffer .....Congress
Gerald A. Fitzgerald .....Airline Economics
Wallace I. Longstreth .....Cargo
Fred S. Hunter .....West Coast
Richard van Osten .....West Coast
Anthony Vandyk .....International
Jean-Marie Riche .....Paris
Sam P. Saint .....Contributing Operations
Selig Altschul .....Contributing Financial
Jewelle Magarity .....Editorial Assistant

PRODUCTION

William H. Martin .....Art Director
Frank F. Kozelek .....Ass't Art Director
John Walen .....Production Manager
Elsie Gray .....Ass't Production Manager

EDITORIAL AND BUSINESS OFFICES

Lawrence L. Brettner, Circulation Director; George F. Peterson, Research Manager; Fay D. Crowley, Advertising Service Manager; Stephen A. Rynas, Advertising Promotion Manager; 1001 Vermont Ave., N.W., Washington 5, D.C., U.S.A. Phone: Sterling 3-5400. Cable: AMERAV.

REGIONAL OFFICES

New York City: 17 East 48th St., New York 17, N.Y., Frederick W. Pratt, regional advertising manager. Phone: Plaza 3-1100. **West Coast:** 8929 Wilshire Boulevard, Beverly Hills, Calif., Fred S. Hunter, manager; William F. Toomey, regional advertising manager. Phone: Oleander 5-9161 and Olympia 7-1555. **Canada:** Allin Associates, 12 Richmond Street East, Toronto 1, Ontario. Phone: Empire 4-2001. Allin Associates 2055 Mountain Street, Montreal, Quebec. **Chicago:** 139 N. Clark St., Chicago 2, Ill. Richard K. Helwig, regional advertising manager. Phone: Central 6-5804. **Cleveland:** 244 Hanna Bldg., 1422 Euclid Avenue, Cleveland 15, Ohio. Phone: Prospect 1-2420, Donald E. Murray, regional advertising manager. **Florida:** 208 Almeria Ave., Coral Gables, Fla., Richard D. Hager, sales representative. Phone: Highland 4-8326. **Geneva:** American Aviation Publications, 10 Rue Grenus, Geneva, Switzerland. Anthony Vandyk, European director. **London:** Norall & Hart Ltd., 28 Bruton Street, London, W. 1., England. Phone: Grosvenor 8356. **Paris:** Jean-Marie Riche, 11 Rue Condorcet, Paris (9e). Phone: TRU 15-39. Cable Address: NEWS-AIR PARIS.

SUBSCRIPTION RATES

Single copies—$1.00. For U.S. and Canada—$10.00 for 1 year. Other countries—$15.00 for 1 year. Subscriptions limited to aviation industry personnel.

INCORPORATES

Airports and Air Carriers; Aviation Equipment; The American Pilot; Aviation Sales & Services; U.S. Aviation; American Airports and Airports & Heliports. All rights to these names are reserved.

CHANGE OF ADDRESS

Send old address (exactly as it appears on mailing label on your copy of magazine) and new address, including zone number if any to American Aviation, 1001 Vermont Avenue, N.W., Washington 5, D.C. Allow two weeks for change.

PUBLISHING INFORMATION

Published every other Monday by American Aviation Publications, Inc., Washington, D.C. Printed at The Telegraph Press, Harrisburg, Pa. Accepted as controlled circulation publication at Washington, D.C. and Harrisburg, Pa.

Copyright © 1959, American Aviation Publications, Inc.

Hugh A. Day .....Assistant Publisher
Gerald T. O'Mara .....Adv. Sales Mgr.
Leonard A. Eiserer .....General Manager

NBP

On the Cover

Signifying the modern concept of battlefield mobility, the Bell HU-1A is the first helicopter designed specifically for the Army.

HU-1A is built to live in the field. All components are engineered for a minimum of 1,000 hrs. between overhauls, and any assembly on the aircraft can be replaced in less than 45 min.

The HU-1A has completed service and suitability tests, and is entering last phases of environmental tests at desert and arctic locations.

SPECIAL ARMY AVIATION FEATURES

Aviation Gives Army Mass Mobility 23
Army's Urgent Need—Adequate, Modern Airlift 25
Who's Who In Army Aviation 26
Army Aviation Again Faces Money Cuts 30
These Aircraft Are Army's Mobility 34
Army Aims For Light Turbine Standardization .. 41
Army Looking For Vertical Lift 43
Ft. Rucker Is Heartbeat of Army's Aviation 49
How To Do Business With The Army 53

TRANSPORT NEWS

Eisenhower Request Stirs CAB 59
Earl Johnson Calls Government Short-Sighted .. 60
Chaos May Result from IATA Meeting 63
Riddle Argosys On 'Buy-if-you-like' Basis 64
First Details Given for Britannic 3 66
CAB Report & Forecast 68
Also at CAB 69
Industry At Deadline 59

DEPARTMENTS

Personal View 7
Letters 16
When & Where 16
International Report 56
West Coast Talk 68
En Route 70
Trends
Transport 13
Airports/Airways 14

Aircraft Data Cards
Fairchild C-123B, Trecker P.136-L2
Super Gull, Grumman SA-16A Albatross .. 71

There's a little bit of Europe in every corner of

MEXICO CITY

...Western has 2 wonderful ways to fly there!

"Better than a trip abroad!" say visitors to Mexico City. Here's real foreign flavor—the gaiety of Paris, the romance of Vienna, the smartness of Copenhagen. Yet you can "do" Mexico City for so much less money. And it's so *close*—just hours away on Western's...

FIESTA FLIGHTS What luxury! A Fiesta cocktail hour with choice of fine liquors and hot hors d'oeuvres, vintage champagne with gourmet luncheon, orchids, desserts from an elegant Fiesta Cart, reserved seats.

AIRCOACH FLIGHTS Really *low* fares! You fly in spacious comfort—reserved seats and complimentary meals. Only $79 one way (tax-free) nonstop from Los Angeles.

Either way, you fly on new 4-engine airliners, super-pressurized and equipped with radar!

WESTERN AIRLINES

Circle No. 4 on Reader Service Card.

Where Is The Mobility?

There has been plenty of talk about modernizing the Army to make it mobile for any and all contingencies. So far it has been all talk and no action.

From an air logistics standpoint, this country is tragically weak. In view of its vast advances in the arts and techniques of carrying people and things commercially, the military situation is both paradoxical and baffling.

It is good to hear top military brass herald the jet age and talk about providing the means for moving ground troops around. But it is discouraging when the talk isn't implemented by plans and action.

Today this country has in the turboprop category a relatively few medium range assault transports, the Lockheed C-130s, and a relatively few long-range Douglas C-133s. But the big Douglas C-132, which had been designed as the primary logistical vehicle, not only was canceled quite some time back, but has never been reinstated.

Thanks to Senator Monroney, the Oklahoma Democrat who is aviation's consistent supporter on the Hill, there is renewed interest in legislation to sponsor the design and construction of new modern cargo airplanes, probably through a government corporation. Senator Monroney wants aircraft that can be used commercially but which are immediately available to the military if the need arises. But this legislative activity is only in the early stages and likelihood of passage by both Houses this session cannot be considered to be very great.

The United States is reputedly the greatest air power in the world. But this strength is in striking power. In the vital area of logistics it is geared primarily to ground support. This country will continue to have a serious deficiency so long as striking airpower is not supported by air logistics.

Army Aviation's Cuts

There is a very vigorous, energetic and knowledgeable corner of the United States Army known as Army Aviation. On its own, it would do well in its own field, just as did the old Army Air Corps after it got its own wings and became the Air Force.

But Army Aviation occupies a very small corner in the Army. At the moment the vitality that was exerted when the ground forces decided it needed smaller wings of its own has been dimmed somewhat by budget limitations. The outlook is neither dark nor bright—it's in a gray area in which the air enthusiasts in the Army are just about holding their own and no more.

The Army top command likes to think that it is getting modern and that it is forward-looking by procuring helicopters and liaison aircraft. And to the extent that Army Aviation has indeed made some real progress, the top command is right.

But it's all a matter of degree. The truth is that Army policy is established by infantry and artillery officers, most of whom really don't fully understand the vital need of air in their own service. Although not as serious as was the attitude of the Army toward the old Air Corps, there still remains much of the same approach to military problems.

Great credit must go to that lusty band of lower-echelon Army officers who do have a real understanding of the need for local mobility and who are pressing ahead despite limitations of budget for STOL and VTOL types.

Several years ago Army Aviation was well on the way to developing a new (but not duplicating) air force of real significance. It was a modern concept involving short-range lift. Today this program is moving, but at a slower pace. And its proponents have come to realize that introducing something new into the military services is a slow, tedious and often disheartening task. Those who believe in the concept have no choice but to keep battling. Let us hope they make more gains before it is too late.

Twisting the Meaning

How Communist propaganda twists simple facts around to suit its own purposes came to light with regard to one of our own articles the other day.

In a series of articles following our latest trip to the U.S.S.R. we pointed out the rapid rate of growth of Soviet civil aviation and how it is destined to become the most important medium of passenger travel in that country because of the inadequacy of railroads and the virtual absence of private automobile traffic and the extremely poor highway system.

At the same time we pointed out that almost 90% of intercity passenger traffic in the U.S. is by automobile—the U.S. is a nation on wheels.

Noting these articles, a Communist organ in the U.S. in a column on "The Worker Abroad" observed: "Declaring that the U.S. *is still a nation on wheels* with air travel distinctly second, while the ordinary 'Ivan' in the Soviet Union travels by air . . ." The italics are ours.

One would get the idea from the above that the poor old U.S. was lagging far behind the Soviet Union and that the poor American citizen had to drive his own car as a last resort because air transport was so far underdeveloped. Thus the Soviet Ivan continues to be misled.

Wayne W. Parrish

Lockheed's Hercules takes U.S. based troops

Any place on Earth in 1½ days

The Jet Age's first strategic/tactical transport, the new Lockheed C-130B HERCULES, is the only U. S. Air Force plane designed specifically to airlift battle-ready troops, equipment, and supplies from the U. S. to any area on earth in 36 hours or less—then para-drop them into battle zones or land with them on short, rough fields, sand, snow or ice.

The C-130B HERCULES is a huskier, more powerful, longer range version of the C-130A HERCULES—which in two years of world-wide service with the Air Force has become the unchallenged Champion of the U. S. Strategic Airlift.

Now coming off production lines at Lockheed's Georgia Division, the new C-130B HERCULES will soon enter service with the U. S. Air Force's Tactical Air Command.

Takeoffs from deep sand averaged only 1500 feet in a C130A at 110,000 pounds gross weight. With same load it landed on sand and stopped in less than 950 feet.

Landing on frozen lake, "Ski-130" (weighing 62 tons gross) stops in 1200 feet. Taking off from same lake, this ski-fitted Airlift Champion was airborne in 2100 feet.

20 tons of pallet-loaded cargo can be winched in or out the C-130 in 40 seconds. HERCULES can land, unload 20 to reload 20 tons, take off in 20 minutes—saving 2½ hours.

The C-130 HERCULES transports 92 battle-ready troops, or 64 fully-equipped paratroops — and holds the world record for the heaviest parachute-extracted drop: 30,370 pounds.

Challenging opportunities available today for aircraft and nuclear engineers and scientists. *Write: Professional Employment, 834 West Peachtree Street, N. W., Atlanta 8, Georgia.*

LOCKHEED

JET TRANSPORTS • JET FIGHTERS • JET TRAINERS • COMMERCIAL & MILITARY PROP-JET TRANSPORTS • ROCKETRY
BALLISTIC MISSILE RESEARCH & DEVELOPMENT • WEAPONS SYSTEMS MANAGEMENT • ANTI-SUBMARINE PATROL AIRCRAFT
NUCLEAR-POWERED FLIGHT • ADVANCED ELECTRONICS • AIRBORNE EARLY-WARNING AIRCRAFT • AIRPORT MANAGEMENT
NUCLEAR REACTOR DESIGN & DEVELOPMENT • GROUND SUPPORT EQUIPMENT • WORLD-WIDE AIRCRAFT MAINTENANCE

Circle No. 6 on Reader Service Card.

Circle No. 7 on Reader Service Card.→

"KelAutel"

automatic telephone

gives you Nation-wide Intercom System

The design and development of KelAutel stands as an example of the diversified activities and skills of Hayes scientists and engineers. This automatic telephone instrument is expected to revolutionize telephonic communication. It enables one person or a group of persons to sit in a room and confer with another person or group across town or thousands of miles away. It is installed by your telephone company in your home, office, factory or store, and automatically converts an entire public or private telephone network into an automatic noiseless inter-com system.

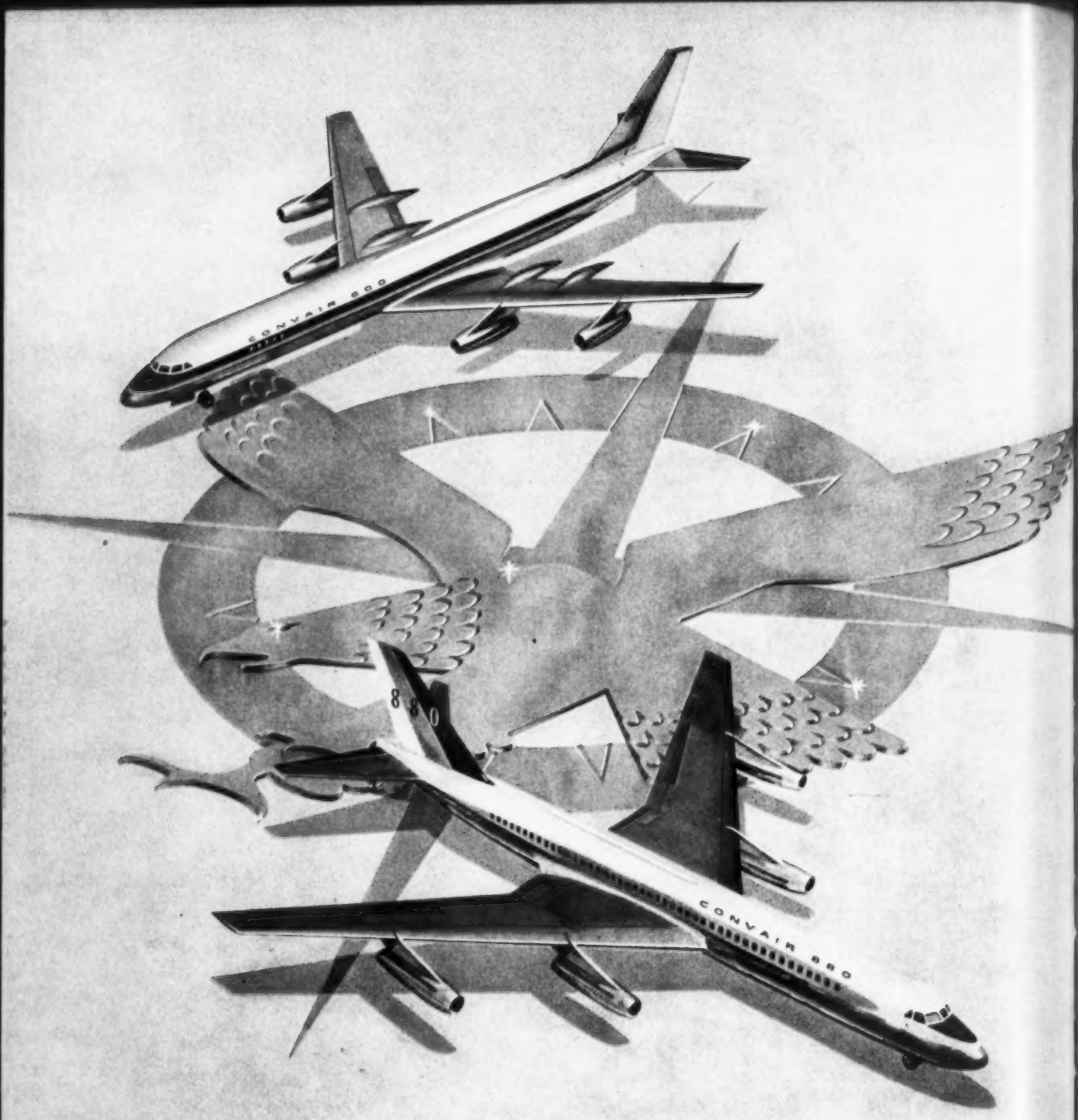
KelAutel may be either manually operated or automatic. When set on automatic, you just sit where you are and start talking when your phone rings. The instruments are marketed world wide by International Telephone and Telegraph Corporation, through Kellogg Switchboard & Supply Company, 6652 South Cicero Avenue, Chicago 38, Illinois.

- Person to Person
- Person to Group
- Group to Group
- for Homes, Stores, Offices, Factories

Hayes
AIRCRAFT CORPORATION
BIRMINGHAM, ALABAMA

RESEARCH, DEVELOPMENT, AND TECHNICAL PERSONNEL are needed by Hayes Aircraft Corporation to participate in modern weapons system and component design and manufacture. With more than 10,000 employees, Hayes is currently active in both missile and aircraft production and is conducting research and development in many diverse fields. We welcome your inquiries. Write to Personnel Director, Department 405, P.O. Box 2287, Birmingham, Alabama.

Engineers • Designers • Manufacturers • Technical Publications



Convair 880 and 600 Jet-liners

YEARS AHEAD FOR YEARS TO COME

Years ahead in every detail, Convair Jet-Liners are leaders for the new jet age . . . designed with precision and crafted to perfection! The ultimate in modern engineering concepts! The very finest expression of elegance and comfort! Advanced beyond all other means of transportation, Convair 880 and 600 Jet-Liners, the world's fastest passenger planes, will be *years ahead for years to come!*

CONVAIR
A DIVISION OF **GENERAL DYNAMICS CORPORATION**

First to offer Convair 880 or 600 Jet-Liner service will be TWA, DELTA, TRANSCONTINENTAL (Argentina), REAL-AEROVIAS (Brazil), S.A.S., SWISSAIR, AMERICAN

Industry will watch closely the big study of U.S. transportation to be undertaken by Senate Interstate and Foreign Commerce Committee. Study was okayed by the last Congress. Rules Committee has now approved $290,000 to carry it on. Among items to be studied: regulation, federal policies dealing with government assistance to transportation, desirability of user charges, policies on consolidations and mergers. The latter subject, says chairman Warren G. Magnuson (D-Wash.), will be high on the agenda.

Encouraging note for airlines: chances are dim that Congress will do anything about raising federal aviation fuel taxes at this session. Succinct comment by Rep. Wilbur Mills (D-Ark.), chairman of the powerful House Ways and Means Committee: "It would appear to be inappropriate for any increases to be made in the tax . . . until considerably more information is available . . ." Legislators want more details from Administration on reasons for the requested increase, how airways costs are to be split between commercial and military, etc.

Still on dead center describes the status of efforts to revise the U.S.-Canadian civil air agreement. Last year's Canadian ruling that immigrants to Canada wouldn't be permitted to travel via the U.S. miffed the State Department, and no acceptable compromise seems in sight. Meanwhile, communities on both sides of the border are complaining that an "aerial curtain" separates them. Both CAB and State Department are working on the problem. One proposal: agreement permitting free air transit 200 miles on each side of the border. But when talks will be held with Canada is anyone's guess.

Big step to speed unloading of air cargo from transatlantic flights has been taken at New York. Customs, immigration and health officials are now stationed at International Airport's cargo building during busy periods. This permits immediate unloading and delivery. Previously, all inbound flights were inspected at the international arrivals building before proceeding to the cargo building.

Quick selection of a replacement for CAB Member Harmar D. Denny is said to be planned by the White House. Republican Denny, now 72, will retire at the end of this year when his term expires. One proposal calls for his successor to be named in time for confirmation by the present session of Congress. This would allow Denny to leave promptly on Jan. 1; at the same time, the new member could be working into the job. Many names are being rumored. Robert Kunzig, former assistant to CAB Chairman James R. Durfee and now a Foreign Claims Settlement Commissioner, is reported to be among the leading contenders for the appointment.

Airline traffic was good in January. Trunkline passenger-miles totaled 2.05 billion, down less than 1% from last year, despite American and Eastern strikes which continued into first part of the month. Available seat-miles were reduced 3.3% to 3.4 billion. Load factor rose to 60.37% against 58.95% last year.

Look for crackdown by FAA on airlines and individuals, both government and industry, for operating violations affecting safety—pilot errors, controller miscues, non-conformance with operating procedures, etc. Example: recent fast action in relieving controller pending investigation of a near-miss.

Brightest prospect accompanying turnover of civil air regulations to FAA is contemplated simplification of all CARs. Program is gaining headway in Bureau of Flight Standards, needs only approval of Administrator Quesada to move into high gear.

Circle No. 8 on Reader Service Card.

Stinging criticism leveled last year at CAA for lack of airport planning paid off. FAA Administrator Quesada is making certain the charge won't be repeated at FAA. The proof—a list of some 20 airport projects, encompassing virtually every major airport topic. Some of the key items:

Vehicular traffic. By March 15 study will be completed of vehicle traffic flow including needs for all types of parking—employe, temporary and overnight for autos, busses and taxis.

Ramp operations. By end of March, study will be completed on guides and standards for planning, construction and utilization of terminal aprons.

Airport servicing. Sometime this spring, agency hopes to complete study of fixed apron servicing needs, including fueling, electrical, sanitation, water, etc.

Airfreight and cargo. By April 1, study of needs for adequate cargo handling facilities should be available.

Other projects are more advanced. Revised Airport Drainage manual is ready for publication. Report of survey of 60 airports on terminal building has been sent to regions for review, will become basis for revised Airport Terminal Buildings booklet. Revision of "Standard Specifications for Construction of Airports" is at Government Printing Office for publication.

Airport Operators Council bid for bigger and more effective membership (A/A, Jan. 12, p. 26) is beginning to take shape. E. Thomas Burnard, executive director, has been moved up to executive vice president and Ross A. Knight has been signed on as the first of two technical assistants in the expanded Washington office. A third man to handle public relations also is to be hired. Revamped base dues will be scaled from $250 a year up to $700, depending on FAA traffic hub designation, instead of flat $1,000. Additionally, a new charge will be assessed on the basis of passengers enplaned.

Anti-administration push behind airport bill has lost its steam, particularly in the House. Result: A $62.1 million per year program (instead of Senate's $100 million) reported out of House committee. Also, a declining "discretionary" fund—dropping from $20 million in fiscal 1961 to only $10 million in 1963.

The big weakspot proved to be terminal aid. Here President Eisenhower's personal economy campaign took its toll, and House committee slashed $68 million from measure, a sum equivalent to that saved by erasing all aid for non-federal terminal facilities.

The outlook: Democrat leadership has had a change of heart, now considers terminal aid too flimsy an issue to attract the forces needed to override a veto if it comes. With the change, terminal aid could be dead beyond June 30.

U.S. International carriers operating into London Airport, already faced with gargantuan rises in everyday operating costs, face still stiffer fees at the British port. Ministry of Transport and Civil Aviation proposal to boost landing fees would cost 707 operators up to $242.62, a 35.7% jump. On top of this would be an increase in passenger tax from 70¢ to $1.03.

As might have been expected, British Commonwealth nations voted British right down the line at the ICAO navigation aid meetings in Montreal despite heavy endorsement of the U.S. proposal by most airlines. The American VOR/DMET, which was adopted, received negative votes from the United Kingdom, Canada, Australia and New Zealand.

FAL

ON TARGET WITH AC

FRONTIER AIRLINES RANGES THE ROCKIES... FLIES EXCLUSIVELY WITH RELIABLE AC SPARK PLUGS!

From Wolf Point, Mont. to Tucson, Ariz., Frontier Airlines' fleet of 25 DC-3s flies over some of the most rugged terrain in the world! FAL's planes spend over 40% of flying time in ascent or descent! Since its founding in 1945, FAL has carried over 1¼ million passengers in perfect safety – a tribute to its personnel and equipment.

Director of Engineering and Maintenance Harvey P. Barnard, Jr. states, "AC *aircraft* Spark Plugs are doing an excellent job for FAL! One of the reasons we like AC-271's is because their construction reduces possibility of moisture or contaminants in the spark plug barrels!"

AC aircraft Spark Plugs have been proved in millions of miles of flying in commercial, private and military planes. You'll find them best for the planes you fly. Massive or platinum electrode, get the AC aircraft Spark Plug designed to give you the best performance in your operation and in the type of aircraft you fly!

Robert Eakle (L), Assistant Foreman Accessory Shop, and Lead Mechanic John Brennan (R) installing AC-271's in FAL plane.

AC SPARK PLUG ⚛ THE ELECTRONICS DIVISION OF GENERAL MOTORS

AIRCRAFT SPARK PLUGS

DISTRIBUTED BY: **Airwork Corporation:** Millville, New Jersey; Miami Springs, Florida; Newark, New Jersey; Atlanta, Georgia; Alexandria, Virginia; Cleveland, Ohio. **Pacific Airmotive Corporation:** Burbank, California; Seattle, Washington; Oakland, California; Kansas City, Kansas; Denver, Colorado; Chicago, Illinois; Linden, New Jersey. **Southwest Airmotive Company:** Dallas, Texas; Houston, Texas; St. Louis, Missouri; Kansas City, Kansas; Denver, Colorado. **Standard Aero Engine Ltd.:** Winnipeg, Manitoba; Vancouver, B.C.; Edmonton, Alberta. **Van Dusen Aircraft Supplies, Inc.:** Chicago, Illinois; Minneapolis, Minnesota; Teterboro, New Jersey; East Boston, Massachusetts; Alexandria, Virginia; Richmond, Virginia; Miami, Florida.

—LETTERS—

We Slighted A Neighbor

In your editorial "USAF Buys the Helio Courier" in the February 9 edition of AMERICAN AVIATION, you state that the Helio Courier powered with 295 hp Lycoming engine "is the first STOL order the AF has ever placed."

We would like to bring to your attention the fact that beginning February 8, 1951, the USAF took delivery of a total of 224 STOL Beaver L.20s from DH Canada. An additional 334 L.20s have been delivered to the U.S. Army, plus 135 STOL Otter U1A aircraft. Recently, the Army purchased our latest and biggest STOL aircraft with an evaluation order for five DHC4 Caribous. The Caribou takes off and lands with 32 troops on board in a distance of 530 ft. (zero wind).

We thought it best to let you have this information as soon as possible, as your statement will no doubt be challenged by both the USAF and U.S. Army.

A. F. MacDonald
Public Relations Manager
The de Havilland Aircraft of Canada, Ltd.

Ed. Note: Sorry, the Helio purchase was the first from a U.S. manufacturer. No intent to overlook U.S. Military's liking for DH Canada's Beavers, Otters and Caribous.

Th' Divil A One

I came a little late to my copy of AMERICAN AVIATION for January 12 and on turning to International Report, I noticed that there seemed to be a misunderstanding in connection with our Friendship operations between Paris and Dublin.

Previously, the basic aircraft for winter operations on the route was the DC-3, so that it is really the DC-3 that has been replaced by the Friendship between Dublin and Paris. During the coming summer the vast majority of services will again be operated by Viscounts. For example, of seven return flights weekly at peak, six will be operated by Viscount aircraft.

Joseph Dillon,
Public Relations Officer
Irish Air Lines
Dublin, Ireland

Skymotive Says 'No!'

Your issue of AMERICAN AVIATION, Feb. 9, 1959—on page 21—under the heading "Business Flying Briefs" carried a news item to the effect that Skymotive Inc. was now a wholly-owned subsidiary of the Shell Oil Company. This is incorrect.

The Shell Oil Company now holds a majority of the capital stock of Skymotive Inc. However, it holds these shares as pledges and not as owner.

The relationship of Shell Oil Company to Skymotive Inc. and to the stockholders of Skymotive Inc. is now the subject of litigation pending in the United States District Court for the Northern District of Illinois, Eastern Division, in a cause entitled "Henebry, et al. v. Shell Oil Company—No. 58 C 2005." In this action the plaintiffs, in addition to various other reliefs, are seeking an injunction respecting certain aspects of Shell Oil Company's management of Skymotive Inc.

John P. Henebry
Founder of Skymotive Inc.
Chicago, Ill.

Whose Airports Are They?

I am very surprised and shocked by your editorial in the February 9, 1959 issue of AMERICAN AVIATION under the heading "Still Balking."

In this editorial, you mention that the Administration would like to reduce the giving of federal tax funds to groups constructing airports, terminals and hangars.

The shocking thing is that federal, state and local governments have already given enormous amounts of money to construction and operations in the airline industry. Does this action on your part constitute what Kant calls categorical imperative in which every action one takes is so designed that it can be a maxim for all persons to follow at all times and under all similar conditions?

You would, therefore, recommend that the federal, state and local governments contribute similar amounts to all industries and not just to the immensely wealthy airline industry? Taxes could then exceed 100% and the standards of living could then plummet to the levels achieved by socialist economies. Our liberties and opportunities could then vanish, and our status would achieve somewhere between that of a slave and an automaton.

Think on this carefully. Stealing looks so easy and so desirable when one person does it to another person, but when it is done by everyone to everyone else, all semblance of order collapses.

I was particularly startled by your statement that "The five-year sum asked in S.1 is a relatively minor item in the over-all federal expenditures." Unfortunately, though, it is an accumulation of these small treasury raids which cause the total federal budget to be so huge and to slide us toward disaster.

Please re-think your attitude toward federal aid in terms of the total picture and what it portends for all of us.

James B. Hoge
3025 Thayer Street
Evanston, Illinois

Ed. Note: A series of misconceptions that (1) airports are *only* for airlines; (2) airlines are "immensely wealthy"; (3) transportation is *not* related to national defense or national economic health; (4) airports are *not* for the public.

When & Where

MARCH

Mar. 12—Support Equipment Institute, Organization Meeting, Washington Statler Hotel, Washington, D.C.

Mar. 18—Aeronautical Radio Inc., annual meeting, Washington, D.C.

Mar. 23-26—IRE, National Convention, Coliseum and Waldorf Astoria Hotel, New York, N.Y.

Mar. 31-Apr. 3—SAE, national aeronautic meeting, aeronautic production forum and aircraft engineering display, New York, N.Y.

APRIL

Apr. 10—Air Freight Forwarders Association, 2nd Annual Meeting, New York, N.Y.

Apr. 12-15—American Association of Airport Executives, annual convention, Savannah, Ga.

Apr. 12-18—Air Force Association, First World Congress of Flight, combined with annual Jet Age Conference, Las Vegas, Nev.

Apr. 12-19—Air Line Pilots Association, Annual Safety Forum, Las Vegas, Nev.

Apr. 16-17—Aeronautical Training Society, 17th Annual Meeting, Las Vegas, Nev.

Apr. 18-23—American Society of Tool Engineers, Annual Meeting, Milwaukee, Wis.

Apr. 23-24—Association of Local and Territorial Airlines, Regional Quarterly Meeting, Bel Air Motor Hotel, St. Louis, Mo.

Apr. 26-30—Airport Operators Council, 12th Annual Meeting, Portland, Ore.

Apr. 27—IATA Permanent Working Group on Restricted Articles, 7th Meeting, Montego Bay, Jamaica, B.W.I.

Apr. 27-29—Aero Medical Association, 30th Annual Meeting, Statler Hotel, Los Angeles.

JUNE

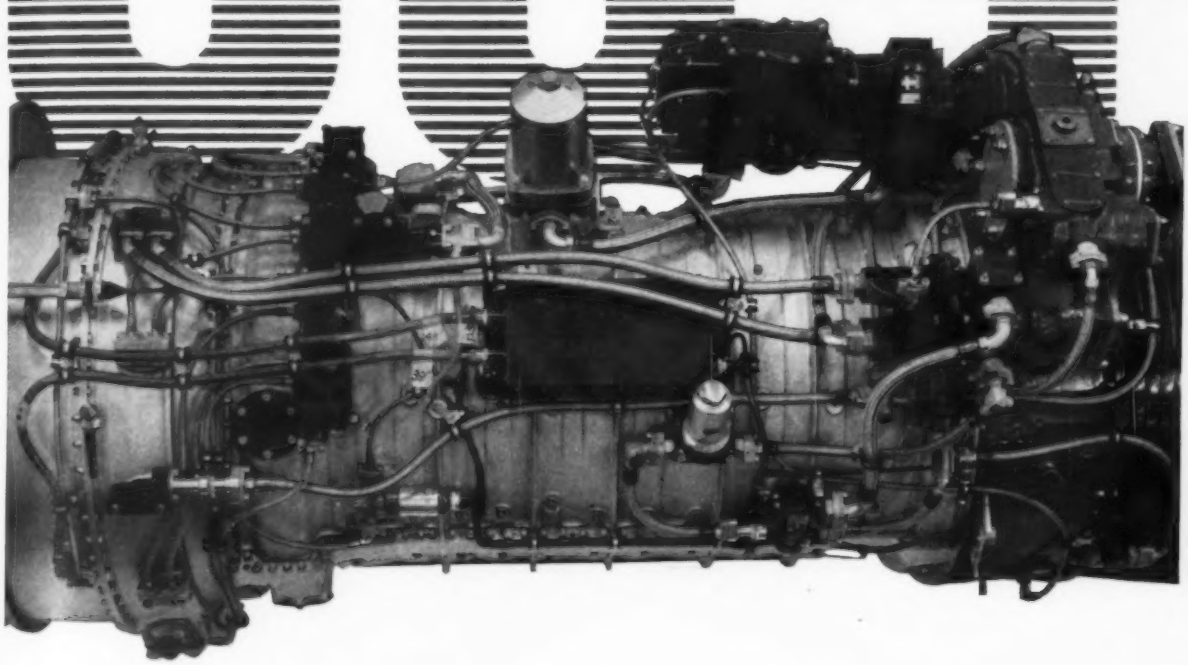
June 5-6—Army Aviation of America, annual meeting, Shoreham Hotel, Washington, D.C.

June 12-21—International Air Show, Le Bourget, Paris

June 23-25—Aviation Distributors and Manufacturers Association, 33d Meeting, St. Francis Hotel, San Francisco

WESTINGHOUSE

J34



BENDIX* IGNITION SYSTEMS—FOR THE BEST IN JETS

Since first produced in 1947, the Westinghouse J34 jet engine has incorporated an ignition system produced by Scintilla Division of Bendix Aviation Corporation.

Here at Scintilla years of experience in ignition manufacture are carefully coordinated with advanced thinking in ignition design. Result: Scintilla Division is a primary source for reliable ignition systems used in finest turbojet and turboprop engines.

The J34-WE-46 shown here, now being produced by the Westinghouse Jet Engine Division in Kansas City, uses a new curvic coupling-type steel compressor, combustion chamber, fuel system and other modifications to permit the use of JP-4 and JP-5 jet fuels. The high-energy ignition system manufactured by the Scintilla Division provides improved air starting characteristics and operation reliability.

Reliability, coupled with serviceability and extended overhaul life, are inherent features of all jet ignition systems designed and built by Scintilla Division of Bendix Aviation Corporation.

Canadian Affiliate: Aviation Electric Ltd., 200 Laurentien Blvd., Montreal 9, Quebec.
Export Sales and Service: Bendix International Division,
205 E. 42nd St., New York 17, N.Y.

*TRADEMARK

Scintilla Division
SIDNEY, NEW YORK

Bendix
AVIATION CORPORATION

Circle No. 10 on Reader Service Card.

When CONTROL cannot be a question of degree . . .

Exacting engine control believed impossible only a few years ago is now the expected, not only in modern aircraft and missiles, but also in today's automobiles and trucks. And, this absolute accuracy is demanded under temperature, pressure, and power conditions found, until recently, only in laboratories. Temperature variations alone of −80°F to +160°F require almost continuous compensations in today's jet aircraft and missiles. More, these ever-increasing requirements must be designed for ever-decreasing standards of size and weight.

For more than a half-century, Holley has pioneered such developments as: lower automotive hood lines through smaller carburetors and fuel control systems for jet engines that save one-third the weight, one-fourth the space. That's why two generations of Americans on the move have come to depend on Holley products.

For more information about Holley products, automotive or aircraft, write to

HOLLEY
Carburetor Co.

11955 E. NINE MILE RD.
WARREN, MICH.

I-30

FOR MORE THAN HALF-A-CENTURY . . . ORIGINAL EQUIPMENT MANUFACTURERS FOR THE AUTOMOTIVE AND AIRCRAFT INDUSTRIES

Circle No. 11 on Reader Service Card.

NAPIER WINS THE FIRST CAA CERTIFICATION FOR CONVAIR JET-PROP CONVERSION!

NEW NAPIER JET-PROP GIVES THE

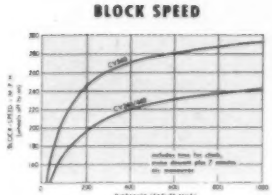
Jet-prop power for Convairs . . . offers you the most direct solution to rising costs in air transportation.

20 ADDITIONAL YEARS OF PROFITABLE OPERATION

Canadair, Ltd., a subsidiary of General Dynamics Corporation, now offers the jet-prop Canadair/Convair 540 . . . in two versions. In Version A, you get a new production line aircraft powered by Napier 3500 horsepower gas turbine engines. In Version B, your present Convair 340/440 is converted to jet-prop power by replacing its piston engines with the same Napier gas turbine engines.

The economy and performance of both versions is identical. Either version gives you the many advantages of jet-prop power. Either version offers a profitable life span as long as that of the DC-3 . . . which began in the mid-thirties and is still going strong.

BLOCK SPEED



The Canadair/Convair 540 is the latest development in the world-famous Convair series of 240-340-440 airliners.

SHRINK OPERATING COSTS AND WIDEN PROFIT MARGINS

When powered by Napier engines, the Canadair/Convair 540's direct operating costs drop from 91c per mile to 82c (as compared with piston engined Convairs) . . . with a resulting *drop of 7% in break-even load factor.* Hourly profits jump from $32 to $84 . . . thus more than doubling the annual profit from $86,400 to $252,000 (based on 2700 hours utilization and an average of 33 passengers). You can depreciate your investment in a Canadair/Convair 540 in as few as five years. The additional productive capability more than pays for the cost. In addition, the increased passenger attraction of jet-prop power will automatically result in a higher average load factor.

MAXIMUM UTILIZATION OF YOUR CANADAIR/CONVAIR 540

You can keep your Napier-powered Canadair/Convair 540 in the air longer . . . where your profits are made./Ground time and delays decrease. There's less need for routine inspection and minor repairs. You also require less stockpiling of spare parts along the route.

E CONVAIR A NEW LEASE ON LIFE

Your Canadair/Convair 540 now covers more distance per hour. Speed increases by 50 m.p.h. Time to cruising altitude lessens by 54%. Maximum payload range leaps from 240 miles to 650 miles (with reserves). Jet-prop propulsion also allows you to carry more passengers. The Convair 340/440 now has a standard capacity of 44 passengers. In the Canadair/Convair 540 you have flexibility—from the deluxe configuration of 48 passengers to a tourist configuration with 64 seats. Therefore you can tailor your seating plan to meet your specific needs.

STRONGER PASSENGER APPEAL

You can have several *strong new selling points* for your advertising and promotion to passenger prospects.

MORE COMFORTABLE AIR TRAVEL

The Napier jet-prop reduces noise and vibration to a bare minimum . . . greatly increasing passenger comfort and satisfaction.

SWIFTER AIR TRAVEL

With the improved speed, you can cut down flying time between stops. With less need for maintenance and refueling, you can minimize ground time.

WORLD-WIDE SERVICE FACILITIES

As the owner of a Napier-powered Canadair/Convair 540, you have at your disposal the combined service facilities of Canadair, a subsidiary of General Dynamics Corporation, and of Napier, a subsidiary of the English Electric Company.

World-wide in scope they will provide you with continuous analysis, correction, and prevention of service problems during the operating life of your Napier-powered Canadair/Convair 540.

NOW FLY THE JET-PROP CANADAIR CONVAIR 540 IN A DEMONSTRATION

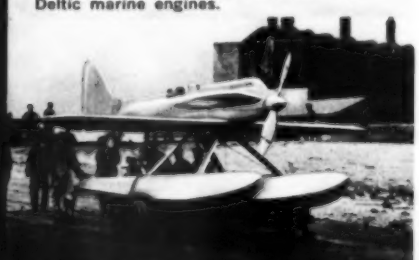
Napier invites all airline operators, and executive and corporate aircraft operators, to fly the Canadair/Convair 540. The Napier world-wide demonstration tour begins in March . . . using several Canadair/Convair 540's. To schedule your flight, write to Napier Engines, Inc., 909 Dupont Circle Building, Washington 3, D. C.

FOR
THE
JET
AGE
.....
A
NEW
HEART
FOR
THE
CONVAIR

Most powerful single-unit of its class . . . British Railways Deltic Locomotive. Top speed: 105 m.p.h. Powered by two Napier Deltic engines.

Westland Westminster—helicopter carr 6 tons of cargo or 46 passengers . . . po ered by two Napier Eland engines.

World's fastest torpedo boat . . . Royal Norwegian Navy. Powered by two Napier Deltic marine engines.



Schneider Cup Winner—1927. Supermarine S.S. . . . 281.6 m.p.h. Powered by Napier Lion engine.

Bristol 192. Royal Air Force Helicopter with two Napier Gazelle free turbines.

150 YEARS OF ENGINEERING LEADERSHIP

Napier has been in the forefront of precision engineering since 1808. At present a member of the world-famous English Electric Group of Companies, Napier manufactures a wide variety of aviation, marine, industrial, and rocket engines, turbochargers, and de-icing equipment. Napier products are sold throughout the world.

Napier engines have powered craft which have won world speed records on land, sea, and air. The Napier Eland is only one of many pace-setting Napier engines.

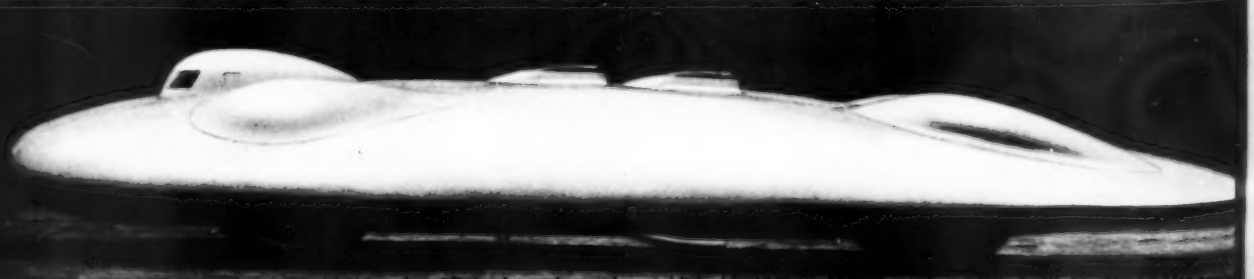
Napier can supply you with literature . . . illustrated with graphs and photographs . . . which contains complete technical data on costs, performance, and installation of the Napier jet-prop engine. Write to: Napier Engines, Inc., 909 Dupont Circle Building, Washington 3, D. C.

Westland Wessex . . . helicopter powe by Napier Gazelle free turbine.

Fairey Rotodyne—vertical take-off airli holds 48 passengers. Equipped with t Napier Eland gas turbine engines. Ho world's record for convertiplanes.

NAPIER ENGINES INC.

NAPIER ENGINES, INC. • A subsidiary of D. Napier & Son, Ltd., London, England • A member of THE ENGLISH ELECTRIC GROUP OF COMPANIES



Current holder of world's land speed record—established in 1962 — 3[illegible] m.p.h. . . Fitted with two Napier Eland

Chief of Staff Maxwell D. Taylor is one of Army aviation's staunchest supporters. Repeatedly he has stressed the urgency of Army's need for airborne mobility and maneuverability. Success or even survival in any future war may hinge on flexibility of air movement, he has said. Gen. Taylor is shown here in an informal picture made during a Pentagon press conference.

Aviation: Army's Mass Mobility

By Joseph S. Murphy
Executive Editor

Mobility, combined in proper proportion with firepower, communications, and trained manpower, provides the formula for success on the field of battle. Such mobility should be regarded as having three aspects—mobility of men, of materiel, and of the mind. To be successful, field commanders must be able to position troops rapidly, to supply them at this quickened pace, and must themselves possess the flexibility and rapidity of mental reaction consistent with the increased requirements of leadership in modern military operations. This is the viewpoint expressed by top Army officers before Congressional committees and in recent speeches.

Army aviation, of course, has little connection with mental mobility, except as a means of transport for leaders possessing that attribute. However, in more generalized terms, light aviation offers the Army an opportunity to secure a significant mobility differential on the fluid battlefields which will result from the use of modern weaponry.

Considering that future battles will be fought under the threat or actual use of nuclear firepower, a requirement for success or even survival in combat will be widely deployed formations with a high degree of maneuverability. Units will have to mass rapidly to gain or to press home an advantage and, for reasons of safety, will be under an equally urgent requirement to disperse as soon as the objective is taken. Air movement is certain to be a principal medium through which this flexibility is achieved.

The marked improvement in mobility which can be obtained through the use of aerial vehicles will be of great importance to an Army which must always contemplate operating against numerically superior enemies. This consideration is applicable to the conventional as well as the atomic battlefield.

In support of the above concept of military operations, tactical maneuver and combat supply operations based on the use of aerial vehicles will be routine in future warfare. The battles of tomorrow will see the Army airplane and helicopter continuing the many roles they have already assumed in our modern Army. For example, light aviation will provide commanders at all levels with the means to be at the right place at the right time, where they may personally influence the outcome of the battle. Light aircraft will also assist with liaison, communications, and adjustment of fire for artillery, rocket, and missile units. These planes will also contribute to effective counterreconnaissance, security, seizure of critical areas in advance of heavy forces, and other actions which the Army normally lumps under the title of "reconnaissance." And finally, Army aviation will continue its well-known and much appreciated role in battlefield casualty evacuation. Life or death of the wounded on the battlefield is often determined by the rapidity with which casualties can be evacuated to hospitals in the rear. In the Korean War, Army helicopters used in this fashion were responsible for the saving of thousands of lives.

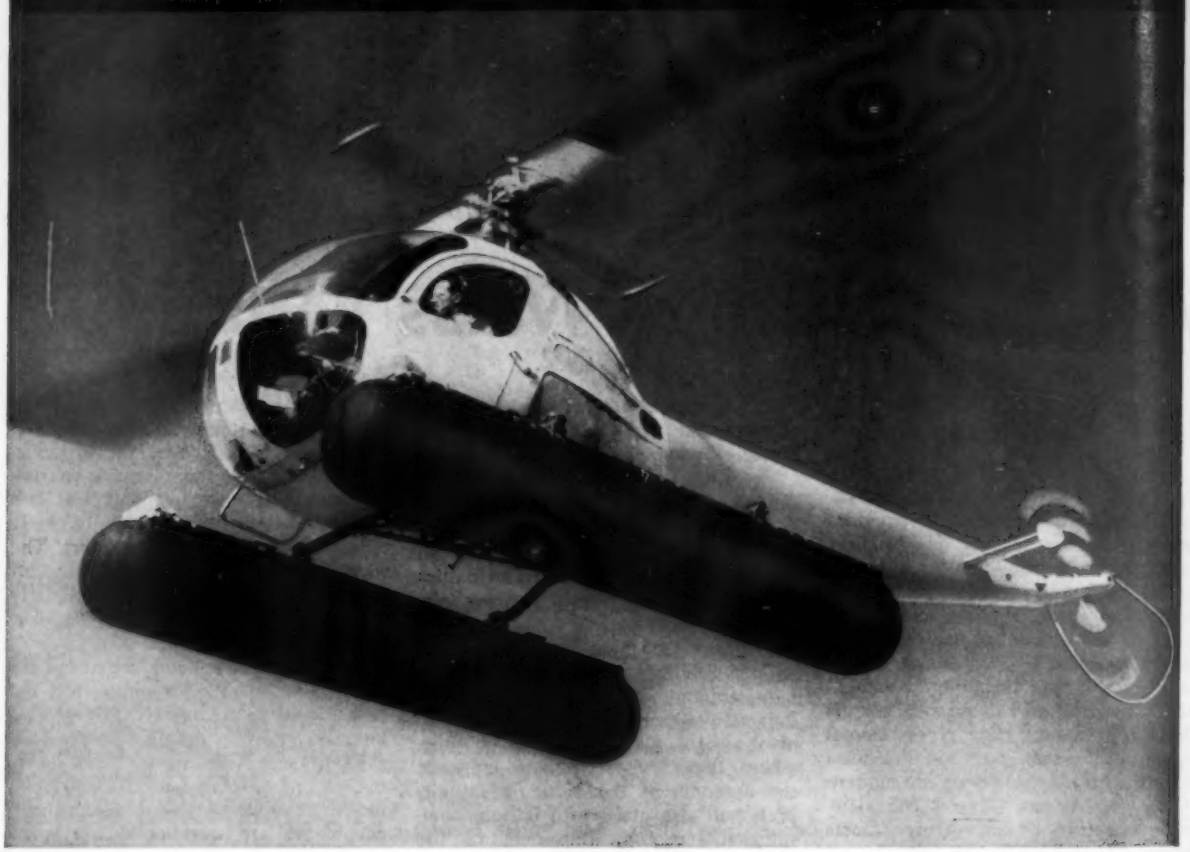
The planes and helicopters of Army aviation do not compete with those of the Navy or Air Force. Army planes are not designed for high speeds, long ranges, or heavy firepower. Rather, these vehicles must be able to live in the field with troops and must therefore have characteristics which will suit them for this role, such as short and vertical takeoff and landing, simplicity of operation, ease of maintenance, and ruggedness.

The Army today has over 5,000 fixed-wing and rotary-wing aircraft. They are constantly being adapted in design or function to render more effective support for our combat units. At the same time, the Army is striving to lighten its weapons, supplies, and equipment so that they will be more readily adaptable to air transport. The wide variety of uses for Army aircraft is constantly increasing and is already giving to field commanders a mobility never experienced in the past.

Further improvements are ahead for Army Aviation. Working in partnership with industry, Army is continuing its intensive research program in the light aviation field. Army research and development, the aircraft industry, and other industries with appropriate research capabilities are working at top speed to develop the so-called zero ground pressure vehicles which will transport troops and their equipment on a cushion of air a few feet above the earth. Such vehicles when achieved will not face the hazards of high altitude flight and, in their ultimate form, will move effectively, day or night, over any type of terrain and under all kinds of weather conditions.

Modern tactical concepts contemplate battlefield mobility in four related forms: the mobility of the individual, the mobility of the vehicles in which he is transported into combat, the mobility of the organization containing both man and vehicle, and finally the over-all mobility of those logistical and administrative support elements of the Army which must be responsible for the needs of tactical operations. Army aviation will assist materially in meeting the requirements of all of these aspects of mobility. In so doing, it will account in a most important degree for the achievement of the tactical mobility which multiplies the effectiveness of the firepower, communications, and trained manpower and combine with these other elements to provide the formula for victory.

HELICOPTER FLOATS / another product of Air Cruisers research



Versatile, Dependable Flotation Gear

Air Cruisers' inflatable flotation gear provides safe landings for helicopters on land or sea. Utility floats like those shown above provide *eight* completely separate buoyancy chambers for stable landings on water supporting pay loads up to 5200 pounds of buoyancy. Yet because of low operating pressures inside their tough, laminated rubber and nylon construction they can withstand landings on the most rugged terrain. They weigh only 18 pounds each.

Helicopter flotation gear manufactured by Air Cruisers includes utility floats, fixed emergency floats already inflated, and floats which are normally stowed around the landing gear and can be inflated for emergency landings in seconds with a unique jet inflation system. Dependable, lightweight and simple to inflate, Air Cruisers' floats can be custom made to meet specific requirements.

The pioneer developer of flotation gear of all types for helicopters, Air Cruisers is America's most experienced fabricator of inflatables from rubberized nylon materials—the only manufacturer which conducts continuous research in survival equipment.

ENGINEERING REPRESENTATIVES: AIRSUPPLY AND AERO ENGINEERING, OFFICES IN MAJOR CITIES

THE GARRETT CORPORATION

AIR CRUISERS DIVISION

BELMAR, NEW JERSEY

LIFE JACKETS • LIFE RAFTS • HELICOPTER FLOATS • ESCAPE SLIDES • GAS BREATHER BAGS • DECELERATION BAGS

Army's Urgent Need . . . Adequate, Modern Airlift

The Army's battle for strategic airlift won't die. Its noisy reverberations will be heard on Capitol Hill again this year. However, it is extremely doubtful that anything more than a stalemate can develop because even if Congress provides the money for lift, as it did last year, it is extremely doubtful that the Administration would spend the money in the light of two reports indicating that Joint Chiefs of Staff have found that existing lift is adequate to meet foreseeable requirements.

Army planners battle this conclusion. They argue cogently that recent events in the Near East clearly indicate lack of necessary strategic airlift. Dramatic example cited is that if Great Britain had had the lift to move troops into the Suez before the United Nations acted the story of the United Arab Republic might never have been told.

The Army's thesis is relatively simple. It argues that the era of the limited war is now upon us. The only way to avoid the spread of the limited war into a total war is quick reaction time—that is the ability to move combat troops and equipment anywhere in the world in a matter of a very few days.

They are inclined to pass over the problem of defining the limited war on which requirements must be predicated. As of now, planners are defining limited wars as anything other than one in which Russia and the United States trade blows using big nuclear weapons. However, this broad definition admittedly doesn't solve the problem of defining requirements against which airlift availability for strategic use can be measured.

It's on the question of requirements that Army planners really get bitter. They argue that there are certain self-evident facts. The first and perhaps most important is that the MATS fleet needs modernization. They point out that now there are really only two aircraft which fall within the category of strategic lift aircraft—the C-124 and the C-133. The C-124, they say, is an old airplane (it's 10 years old) and the C-133 is basically a cargo aircraft even though it could haul troops. Therefore, MATS ought to be modernized, and they look with interest on the canceled C-132 program and the possibility of building a large water-based jet aircraft patterned after the SeaMaster and dubbed SeaMistress.

The second point made is that you can't for purposes of strategic lift make do with the Civil Reserve Air Fleet (CRAF). Army's point is that reaction time must be fast if strategic airlift is valuable at all. It would take too long to put the CRAF into the military service and would destroy necessary civilian transport at home.

In any event, Army says there is an easy way to determine requirements. Run training exercises using Army STRAC units and MATS' big strategic airlift planes. Such a training exercise has never been run. They would, according to the Army, provide many of the answers to questions which now fog up the issue. Army would find out about such problems as training and logistic support. It could determine how much further it must go towards reducing the weight of equipment and to change concepts to fit the use of aircraft as a means of transport.

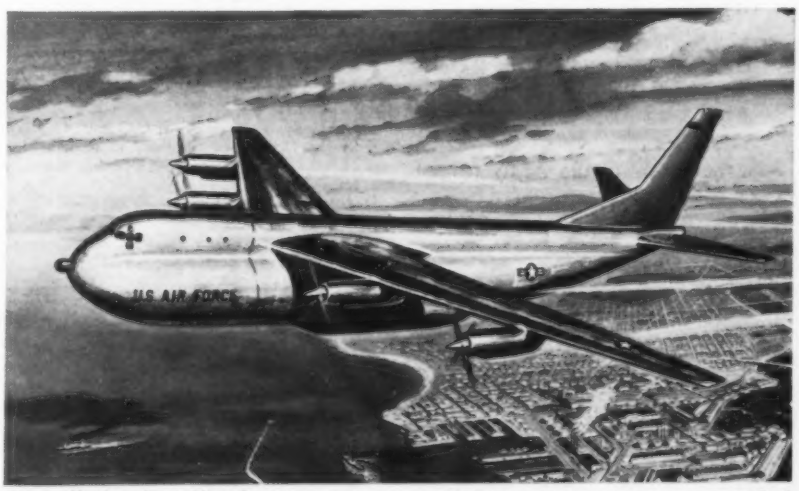
MATS would learn too from such an exercise. It would learn, planners say, what its job really is in the field, moving combat troops over long distances. Here is where one of the bitterest fights develops between the Army and the Air Force.

It's the Army's contention that MATS is a service organization. This means that it must provide, without Army pay, the services which the Army needs if it is to perform its combat missions. It means, too, according to the Army, that MATS ought to be ready, willing and able to provide the aircraft which the Army needs to perform its assigned role.

Army concedes that Strategic Air Command quite logically has the first call on MATS. This is because SAC has the highest priority given to any combat mission at this time. It concedes also that the training exercises which MATS and SAC have run have made SAC perhaps the best prepared service in the world. However, Army wants relatively the same treatment for its STRAC units.

General Maxwell Taylor, Army Chief of Staff, makes it plain that he doesn't expect aircraft to sit on the ground at Army camps waiting to be used. He has repeatedly said that such a handling of the limited numbers of aircraft available would be unnecessarily wasteful. However, he wants to know how many aircraft would be tagged for use by Army for strategic lift, what kinds they are and where they might be located. This information is needed, according to Gen. Taylor, to make plans for logistic support and for handling of troops and supplies at en route flight bases.

Basically, though, Army wants to be able to carry a maximum number of troops for a long distance, quickly and safely. It therefore regrets the killing of the C-132. It wants the training exercises to establish for it that the C-132 or some other plane of similar size and speed is needed for STRAC. And it believes that the cost of such a plane should come out of the MATS budget.



Cancellation last March of the Douglas C-132 (pictured above) program provoked widespread speculation and much comment on Capitol Hill. Cost of cancelling the contract was put at close to $100 million. MATS wants this type plane.

BRUCKER

MAGRUDER

TRUDEAU

STORKE

BESSON

MCNAMARA

Who's Who In Army Aviation

THE BIG CHALLENGE to the Army in meeting the increasing demands of air mobility continues to reflect itself in reorganization within its "aviation" ranks, new divisions that better identify the role of aviation, new names in the posts that carry aviation responsibility.

Since the first printing of "Who's Who in Army Aviation" in the March 10, 1958 issue of AMERICAN AVIATION, the number of organization changes makes obsolete this earlier edition. To bring the roster up to date, the editors have compiled a new "Who's Who," listing the names and office locations of the officers and civilians who are calling the shots in Army Aviation.

Note: Phone extensions are shown for personnel having direct Army Aviation duties. Unless otherwise noted, basic number is Washington, D.C. Liberty 5-6700.

Secy. of Defense—Neil H. McElroy.

Director of Defense Research and Engineering—Dr. Herbert F. York.

Director of Aeronautics—T. L. Muse.
Army Aviation—Lt. Col. J. L. Klingenhagen, Liberty 5-6700, Ext. 78301.

Secretary of the Army—Wilber M. Brucker.

Undersecretary of the Army—Hon. Hugh M. Milton II.

Asst. Secretary of the Army (Manpower, Personnel & Reserve Forces)—Dewey Short.

Chief, Aviation Affairs—Colonel I. B. Washburn, Ext. 78789.

Asst. Secretary of the Army (Financial Management)—George Holmes Roderick.

Asst. Secretary of the Army (Logistics)—F. H. Higgins.

Director of Research and Development—Dr. William H. Martin.

Chief of Staff—Gen. Maxwell D. Taylor (photo p. 23).

Deputy Chief of Staff for Logistics—Lt. Gen. C. B. Magruder

Director of Plans & Materiel—Brig. Gen. L. J. Lincoln
Office, Director of Plans & Materiel—Col. Wayne E. Downing, Chief for Army Aviation, Special Projects Office, Ext. 72903 (monitors over-all logistics aspects of Army Aviation).
Requirements Division—Lt. Col. J. C. Knox, Major Equipment Section, Equipment Review Branch, Ext. 72833 (program manager for Army Aircraft).
Director of Procurement—Brig. Gen. J. E. Engler
Procurement Division—Maj. Charles V. Graft, Jr., Aircraft and Missiles Unit, Programs and Budget Branch, Ext. 54333 (production analyst).
Director of Supply Operations—Brig. Gen. A. J. Adams
Storage & Distribution Division—Lt. Col. C. W. Arey, Distribution Branch, Ext. 54634 (policies for and supervision of world-wide distribution of Army aircraft).
Materiel Maintenance Division—Maj. W. P. Craddock, Aircraft Maintenance Officer, Maintenance Engineering Branch, Ext. 77875 (supervises planning and implementation of aviation portion of Army maintenance program).

Deputy Chief of Staff for Military Operations—Lt. Gen. J. E. Moore

Army Aviation—
Director, Brig. Gen. E. F. Easterbrook, Ext. 52882
Deputy Director, Col. H. D. Edson, Ext. 78764
Aviation Safety Division—
Lt. Col. G. H. Shea, Ext. 75207
U.S. Army Board for Aviation Accident Research—Col. J. F. Wells, Fort Rucker, Alabama, Ext. 2192
Operations and Requirements Division—Col. E. B. Jennings, Ext. 73228
Programming and Analysis Division—Col. C. L. Shepard, Jr., Ext. 77528

Chief of Research and Development—Lt. Gen. Arthur G. Trudeau

Director of Developments—Brig. Gen. F. H. Britton, Ext. 75083.
Air Mobility Division—Col. G. P. Seneff, Jr., Ext. 53869.
Army Aircraft R&D Branch—Lt. Col. H. L. Bush, Ext. 72738.
Technical Liaison Office—Col. J. E. Shirley, Ext. 52649.

EASTERBROOK

BRITTON

WELLS

SHEPARD

SENEFF

GRAFT

CLIFTON

MEYER

KELSEY

AMOROSO

BUNKER

BUSH

STROK

RESLER

SCHOENFELD

LENTZ

TROTH

CLEVELAND

Chief of Information—Maj. Gen. H. P. Storke

Deputy Chief of Information—Brig. Gen. C. V. Clifton

Special Projects Officer, Army Aviation—Lt. Col. P. R. Wagner, Ext. 78139 (Information Projects Officer for Army Aviation).

Chief of Transportation—Maj. Gen. F. S. Besson, Jr., Ext. 54512

Deputy Chief for Aviation—Brig. Gen. Richard D. Meyer, Ext. 76686

Aviation Consultant—Brig. Gen. Benjamin S. Kelsey, USAF (Ret.)

Aviation Plans Division—Col. L. Amoroso, Ext. 77784 (aviation systems management, plans and policy)

Assistant Chief of Transportation (Research & Development)—Col. David B. Parker, Ext. 55480 (supervision over Transportation Corps research and development program, including Army aircraft).

Deputy—Lt. Col. Michael J. Strok, Ext. 73552

Technical Director, Aviation—D. M. Thompson, Ext. 53445 (provides planning and technical supervision to Asst. Chief, R&D, TC).

Assistant Chief of Transportation, Materiel—Col. B. T. Resler, Ext. 77388

Supply & Maintenance Division—Col. E. P. Kutcham, Jr. Ext. 71542 (handles aircraft, maritime, railway and general transport support administrative vehicular equipment).

Procurement Division—Lt. Col. W. E. Schoenfeld, Ext. 52014 (procurement of all Transportation Corps items, including aircraft).

Assistant Chief of Transportation, Military Operations—Col. John J. Lane, Ext. 77463

Training and Organization Division—Col. B. A. Lentz, Ext. 73779 (in charge of military training and military organization).

Assistant Chief of Transportation for Transportation Engineering—Mr. D. Kenneth Chacey, Ext. 53976

Installations Division—Col. J. K. Troth, Ext. 56[illegible] (construction and maintenance of aviation facilities and safety).

Class II Installations or Activities (Field Commands):

Transportation Research & Engineering Command—Col. Vancel R. Beck, Ft. Eustis, Va., TRinity 7-1311, Ext. 6276

Wright Field Division—Col. William R. Patterson, Wright Patterson Air Force Base, Dayton, Ohio, Clearwater 3-7111, Ext. 3-4111

Aviation Division—L. M. Hewin, TRinity 7-1311, Ext. 6184

Transportation Supply & Maintenance Command—Brig. Gen. W. B. Bunker, 12th & Spruce Streets, St. Louis, Mo., MAin 1-6426, Ext. 2201

Transportation Aviation Test & Support Activity—Lt. Col. C. F. Hollis, Ft. Rucker, Ala., Ft. Rucker 518, Ext. 2506

Transportation Training Command—Maj. Gen. Norman S. Vissering, Ft. Eustis, Va., TRinity 7-1311, Ext. 5270

Chief of Engineers—Maj. Gen. E. C. Itschner

Asst. Chief of Engineers for Troop Operations—Brig. Gen. S. R. Hanmer, Ext. 73465

Organization and Training Division—Col. H. F. Cameron, Jr., Ext. 73337

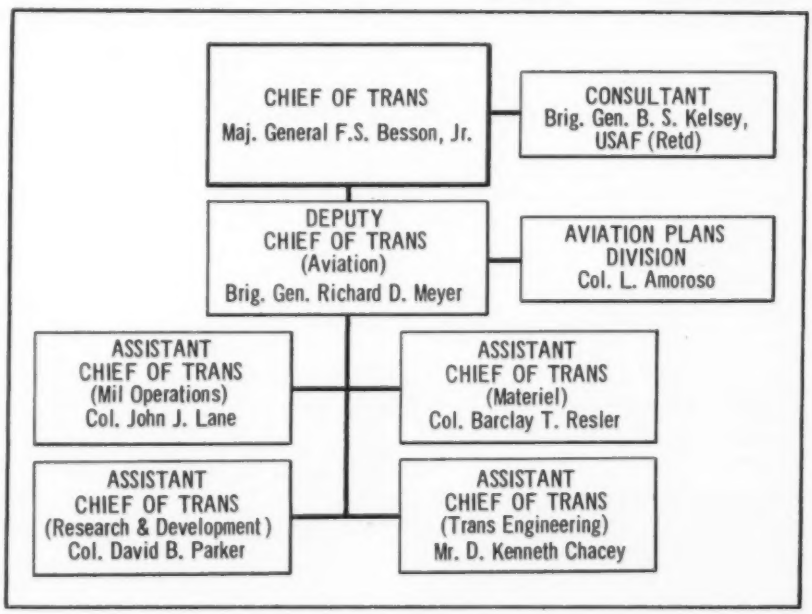
Organization and Doctrine Branch—Lt.

CALLOWAY

HEWITT

SHARPE

LEIDENHEIMER


CHIEF OF TRANS
Maj. General F.S. Besson, Jr.
CONSULTANT
Brig. Gen. B. S. Kelsey, USAF (Retd)
DEPUTY CHIEF OF TRANS (Aviation)
Brig. Gen. Richard D. Meyer
AVIATION PLANS DIVISION
Col. L. Amoroso
ASSISTANT CHIEF OF TRANS (Mil Operations)
Col. John J. Lane
ASSISTANT CHIEF OF TRANS (Materiel)
Col. Barclay T. Resler
ASSISTANT CHIEF OF TRANS (Research & Development)
Col. David B. Parker
ASSISTANT CHIEF OF TRANS (Trans Engineering)
Mr. D. Kenneth Chacey

NEWMAN

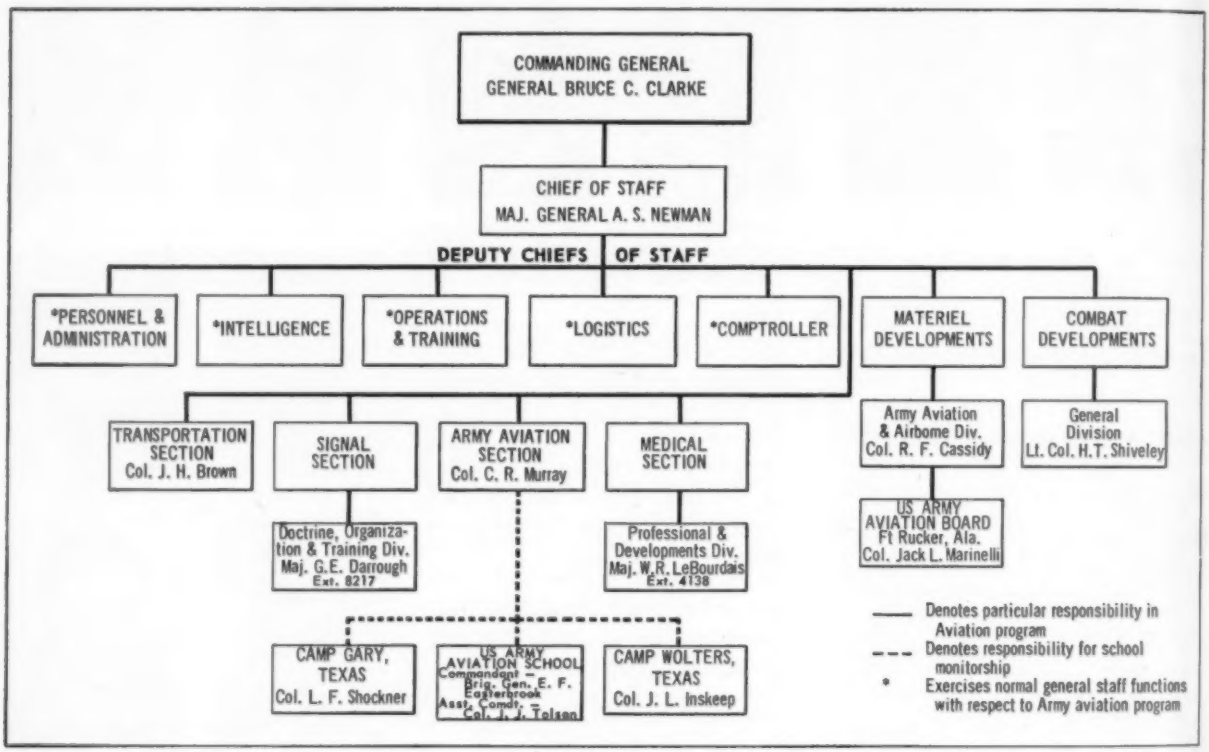
BROWN

DARROUGH

LEBOURDAIS

TOLSON

MARINELLI


COMMANDING GENERAL
GENERAL BRUCE C. CLARKE
CHIEF OF STAFF
MAJ. GENERAL A. S. NEWMAN
DEPUTY CHIEFS OF STAFF
*PERSONNEL & ADMINISTRATION
*INTELLIGENCE
*OPERATIONS & TRAINING
*LOGISTICS
*COMPTROLLER
MATERIEL DEVELOPMENTS
COMBAT DEVELOPMENTS
TRANSPORTATION SECTION Col. J. H. Brown
SIGNAL SECTION
ARMY AVIATION SECTION Col. C. R. Murray
MEDICAL SECTION
Army Aviation & Airborne Div. Col. R. F. Cassidy
General Division Lt. Col. H.T. Shiveley
Doctrine, Organization & Training Div. Maj. G.E. Darrough Ext. 8217
Professional & Developments Div. Maj. W.R. LeBourdais Ext. 4138
US ARMY AVIATION BOARD Ft Rucker, Ala. Col. Jack L. Marinelli
CAMP GARY, TEXAS Col. L. F. Shockner
US ARMY AVIATION SCHOOL Commandant — Brig. Gen. E. F. Easterbrook Asst. Comdt. — Col. J. J. Tolson
CAMP WOLTERS, TEXAS Col. J. L. Inskeep
Denotes particular responsibility in Aviation program
Denotes responsibility for school monitorship
* Exercises normal general staff functions with respect to Army aviation program

Col. J. W. Fickessen, Ext. 77247
Special Assistant for Army Aviation—Maj. J. G. Cleveland, Ext. 76269
Intelligence Division—Col. L. L. Haseman, Ext. 73483
Mapping Branch—Lt. Col. F. Reese, Ext. 52366
Asst. Chief of Engineers for Military Construction—Col. E. E. Wilhoyt, Jr., Acting, Ext. 71656
Army Construction Division—Col. H. E. Sprague, Ext. 77969 (Army Construction, including Army Aviation facilities)
Planning Branch—Mr. L. H. Zach, Ext. 71858 (master plans for future development of airfield facilities)
Army Airfields Planning Section—Mr. Bernard B. Eddy, Ext. 75915 (coordinates layout, design, and requirements of aviation facilities)
Asst. Chief of Engineers for Military Supply—Brig. Gen. D. W. Heiman, Ext. 74105
Research and Development Division—Col. Duncan Hallock, Ext. 73855

Chief of Ordnance—Maj. Gen. J. H. Hinrichs

Deputy Chief of Ordnance—Maj. Gen. August Schomburg
Asst. Chief of Ordnance, Field Service Division, Maj. Gen. F. A. Hansen
Asst. Chief of Ordnance, Industrial Division, Brig. Gen. F. J. McMorrow
Chief of Research and Development Division, Col. C. W. Clark

The Quartermaster General—Maj. Gen. A. T. McNamara.

Chief, Combat Development and Airborne Planning Branch—Lt. Col. Charles R. Scherer, Ext. 56721 (concerned with planning program in aerial delivery field).
Chief, Research and Engineering Division—Col. J. D. Martz, Jr., Ext. 55607 (procures experimental items in research field).
Airborne Officer—Lt. Col. V. R. Chilson, Ext. 54757 (handles airborne research operations).

Class II Installations (Field Commands):

Quartermaster Research and Engineering Command—Brig. Gen. C. Calloway, Natick, Mass., OLympic 3-1000.
Staff Airborne Advisor—Lt. Col. H. H. Hewitt, OLympic 3-1000.
Chief, Aerial Delivery Systems Office—L. W. Sharpe, OLympic 3-1000, Ext. 649 (handles aerial delivery service).

Chief Signal Officer—Lt. Gen. J. D. O'Connell

Combat Development and Operations Division—Brig. Gen. Harold G. Hayes, Ext. 53355 (staff adviser on aviation matters to the Chief Signal Officer). Army Signal Aviation Coordinator—Col. John L. Leidenheimer, Ext. 73858
U.S. Signal Communication Agency, Army Aviation Flight Information Office—Capt. R. E. Hill, Ext. 75351 (handles flight information publications for Army Aviation. Authors instrument approach information. Monitors distribution of TM 11-2557)
U.S. Army Signal Test and Support Activity, Fort Rucker, Alabama—Lt. Col. Charles E. Merritt, Telephone Ozark Ala. 818 Ext. 2206
U.S. Army Signal Avionics Liaison Office—TSMC, 12th and Spruce Streets, St. Louis, Mo., Capt. William R. Chaires, Telephone Maine 1-6426, Ext. 2254
Procurement and Distribution Division—Maj. Gen. H. L. Scofield, Ext. 67255
Maintenance and Engineering Branch—Avionics Installation and Maintenance—Lt. Col. John F. Kuster, Ext. 67177
Research and Development Division—Brig. Gen. Earle E. Cook, Ext. 56153
Communications Branch—Robert F. Brady, Ext. 73144

O'CONNELL

HILL

STAMBOUGH

AUSTIN

Avionics and Surveillance Branch—W. A. Stambaugh, Ext. 73146
Electronics Branch—Lt. Col. H. T. Darracott, Ext. 73242

The Surgeon General—Maj. Gen. S. B. Hays

Supply Division—Col. T. M. Carow, Ext. 63115 (procures medical equipment and supplies for Army Aviation).
Medical Plans & Operations Division—Col. A. A. Cardona. Assistant for Operations—Colonel R. P. Campbell. Aviation Branch—Lt. Col. R. B. Austin, III, Ext. 66274 (coordinates all Army Aviation medical activities).
Special Assistant to The Surgeon General for Research and Development Affairs—Brig. Gen. J. H. McNinch.

U.S. Continental Army Command—Gen. Bruce C. Clarke, Ft. Monroe, Va.

Army Aviation Section—Col. C. R. Murray, HAmpton 7972, Ext. 21241 (all matters pertaining to aviation matters in CONARC).
Army Aviation and Airborne Division, Materiel Developments Section, Col. R. F. Cassidy, HAmpton 7972, Ext. 21122 (handles all aspects of Army Aviation and airborne equipment in CONARC).
Combat Developments Section—Lt. Col. H. T. Shiveley, HAmpton 7972, Ext. 21129 (plans combat employment of Army Aviation).
U.S. Army Aviation Board—Col. Jack L. Marinelli, Fort Rucker, Ala., OZark 818, Ext. 2404.
Army Aviation Center and School—Brig. Gen. E. F. Easterbrook, Fort Rucker, Ala., OZark 818, Ext. 2808.
Camp Gary (Primary Fixed-Wing Training)—Col. L. F. Shockner, San Marcos, Tex., EXport 2-2311, Ext. 3203.
Camp Wolters (Primary Helicopter Training)—Col. J. L. Inskeep, Camp Wolters, Tex., FAirfax 5-2581.

Military District of Washington—LIberty 5-6700.

Army Aviation Officer—Maj. B. M. Zeppenfeld Ext. 57187.
Transportation Officer—Lt. Col. M. A. Hoard Ext. 75120.
Aviation Maintenance and Supply Officer—Maj. D. B. Wilson.
Davison U.S. Army Airfield, Fort Belvoir, Va.—Col. J. W. Britton, EDgewater 9-5500 Ext. 8138.

First U.S. Army, Ft. Jay, Governor's Island, N.Y.— Aviation Officer, Lt. Col. Gordon L. Kinley, WHitehall 4-7700, Ext. 8138.

Second U.S. Army, Ft. Meade, Md.— Aviation Officer, Lt. Col. Elmer J. Fox, ORchard 4-3311, Ext. 2089.

Third U.S. Army, Ft. McPherson, Ga.—Aviation Officer, Col. Kemuel K. Blacker, PLaza 3-3131, Ext. 5140 or 5240.

Fourth U.S. Army, Ft. Sam Houston, Tex.—Aviation Officer, Col. Arthur J. Anderson, CApitol 2-8411, Ext. 5231.

Fifth U.S. Army, Ft. Sheridan, Ill.— Aviation Officer, Lt. Col. Jack J. Tinnin, BUtterfield 8-5800, Ext. 530.

Sixth U.S. Army, Presidio of San Francisco, Calif.— Aviation Officer, Col. Curtis L. Hankins, WEst 1-6111, Ext. 3270.

CLARKE

MURRAY

SCHOCKNER

CASSIDY

SHIVELEY

INNSKEEP

KINLEY

ANDERSON

NEW!
NARDA Pre-Oiler*

Check these 11 features!

1. For pre-oiling, preservation, and spraying.
2. Inexpensive to purchase, operate and maintain.
3. Self-contained package.
4. Operating temperature is attained within 25 minutes of start-up.
5. Unique low-density design electric heaters prevents coking of oil.
6. Air-transportable; light-weight (250 lb. dry) and small (28" diameter base x 48" high).
7. No training needed to operate and maintain.
8. Immediate capacity (10 gpm at 50 psig or 2 gpm at 150 psig) for multi-purpose operation.
9. Can be used as a "toggle" device.
10. Torque Pump-Valve provides reduction in horsepower and prevents overloading.
11. Holds heat, reducing power and time needed to re-heat.

Narda Pre-Oilers are also available for 28 volts DC (Model 59-100) and with gasoline engine (Model 58-100EG). For more information, write us today. Address: Dept. AA-1.

*Patent applied for

the narda hydraulics corporation
122 HERRICKS ROAD, MINEOLA, N. Y.
Subsidiary of The Narda Microwave Corp.

Circle No. 27 on Reader Service Card.

Army Aviation Again Faces Money Cuts

Reduced funding requirements anticipated by planning five years in advance; service needs are nearly met and delivery of aircraft will slow down in fiscal 1959. Buying emphasis shifts to replacements.

By Betty Oswald
Defense Editor

Reduced funding of Army aviation in fiscal 1959 and fiscal 1960 is not attributable to any reduced interest in aviation as an integral part of Army operations. Cutbacks in planned expenditures are attributable to two principal reasons: (1) requirements set four or five years ago are nearly met; and (2) the current plan for taking deliveries of new helicopters and fixed wing aircraft, means that only a relatively few will trickle off the production line in fiscal 1959.

As far as aircraft requirements are concerned, Army about five years ago fixed what it considered an optimum number needed. It expects to have those numbers either late in fiscal 1959 or in early 1960. This means that from here on out, Army will buy pretty much on a replacement basis. However, as new and better aircraft and helicopters become available, there is no intention to replace on a one for one basis, particularly in the area of helicopters where bigger helicopters are —if not a reality—a very real possibility.

In the case of fixed wing aircraft, Army would, of course, like to see present weight restrictions eliminated. Unless this happens, it is almost certain, however, that Army's major drive will be for VTOL/STOL aircraft of relatively small size and for reconnaissance and for somewhat larger helicopters for transporting vehicles, construction equipment, mapping and photographic equipment, and combat and support materiel.

The current picture comes clear on an analysis of Army's spending for aviation equipment. After a period of rising expenditures the level-out period has arrived with the result that not only was less spent in fiscal 1958 in relation to total Army expenditures for procurement and production, but there will be a new drop in the figures in fiscal 1959. This, however, could be followed by a small increase in fiscal 1960, when the de Havilland Caribou, the Bell HU-1, Iroquois and the Grumman Mohawk start to come off the line. However, Army officers are quick to point out that this rise will be offset somewhat because other aircraft are to be phased out.

Table 1 bears the contention of the Army out, seemingly. It wants and needs aviation, as an integral part of its operations. In the years when procurement and production funds have gone up, expenditures for Army aviation have climbed at a somewhat faster rate. In fiscal 1958 when funds levelled out, funds for aviation dropped a little. In fiscal 1959 when Army expenditures are expected to drop by almost 13 percent, the drop in funds for fixed-wing aircraft and helicopters is about one-half the general decrease.

An even clearer picture of the importance which Army gives to aviation appears in Table 2. The portion of total procurement and production money which is devoted to aircraft went up steadily each year from 1952 until 1958 (the period of level out). At this point almost 10.2% of the Army's P & P money was devoted to aircraft and helicopters. In the current year, it is estimated that Army aviation will take more than 10.8% of the total P & P budget.

For all production and procurement, Army will reduce its expenditures from a high of $5.793 billion in fiscal 1954 to $1.35 billion in fiscal 1959—about 23 percent of the amount spent in fiscal 1953. However, dollar figures for aircraft will be—even in the relatively bad year of 1959—almost 60% higher than the 1953 figure.

Army's research money for aircraft was down a little in fiscal 1958 after a steady rise since 1955. This is explained by the attempt to stretch dollars to cover, among other things, research aimed at making the Army more airliftable by reducing the weight of equipment. It is also explained in part by uncertainties still existing over limitations on both the weight and use to which Army aircraft can be put. However, despite these hazards, it is now expected that Army aviation research will climb again in fiscal 1959, and, perhaps, in fiscal 1960.

The picture as it now stands can be seen in Table 3.

Fiscal year	Net Expenditure, total P&P* (millions)	% Change Over Preceding year	Net Expenditure for Aircraft (millions)	% Change over Preceding year
1952	$ 3,976.1	.....	$ 50.1	.....
1953	5,793.8	+46	95.3	+87
1954	3,447.9	—40	82.5	—13
1955	1,196.0	—65	66.5	—19
1956	1,338.9	+12	133.9	+101
1957	1,533.6	+15	165.7	+24
1958	1,546.7	+.085	157.2	—4.8
1959 (est.)	1,350.0	—12.7	147.0	—6.4
Totals	$20,183.0		$898.2	

TABLE 1—Net expenditures from procurement and production appropriations, fiscal 1952 through fiscal 1959 (in millions).
* P&P, Procurement and production.

Fiscal year	% of total P & P net expenditures for Army aircraft
1952	1.3
1953	1.6
1954	2.4
1955	5.6
1956	10.0
1957	10.8
1958	10.1
1959 (est.)	10.8

TABLE 2—Percent of total Army P & P net expenditures for procurement and production of aircraft (fiscal years 1952 through 1959)

Fiscal year	Total R&D net expenditures (millions)	Portion for Aviation	% of total for aviation
1955	$ 377.8	$ 8.0	2.1
1956	413.8	12.0	2.9
1957	435.1	16.3	3.7
1958	476.3	10.4	2.2
1959 (est.)	519.0	13.9	2.7
Totals	$2,222.0	$60.6	

TABLE 3—Total Army research and development net expenditures and portions devoted to Army Aviation R&D for fiscal 1955-1959 (in millions).

FIRST LOW-COST SPACE AGE AIRCRAFT DEMONSTRATES NORAIR SYSTEMS MANAGEMENT CAPABILITY

The twin-jet T-38 –America's first supersonic trainer–aptly demonstrates Norair's capability in systems management. Now in production under USAF contract, the T-38 Talon is the first member of a Northrop-conceived family of lightweight, low-cost space age aircraft.

Soon to follow: a supersonic counterair fighter, the N-156F – first weapon system designed in America for the specific tactical and economic requirements of those free allied nations most vulnerable to enemy attack.

Other important systems management achievements include the USAF Snark SM-62A and the F-89 Scorpion. Norair management of the Snark program produced the free world's first operational intercontinental guided missile – delivered on time and at minimum cost.

In producing America's first nuclear-armed interceptor, Norair's weapon system management of the F-89 was marked by on-time delivery of more than 1,000 units throughout the program's life, and by a significant dollar underrun. A full ten years after its first flight, the Scorpion is still the USAF's most heavily armed interceptor – and a uniquely stable platform for air-launch of atomic rockets.

Norair's cost-proved record of effective management, integrated facilities, and available resources combine to demonstrate outstanding capability as a prime systems contractor.

NORAIR *formerly Northrop Division*
HAWTHORNE, CALIFORNIA
A DIVISION OF NORTHROP CORPORATION

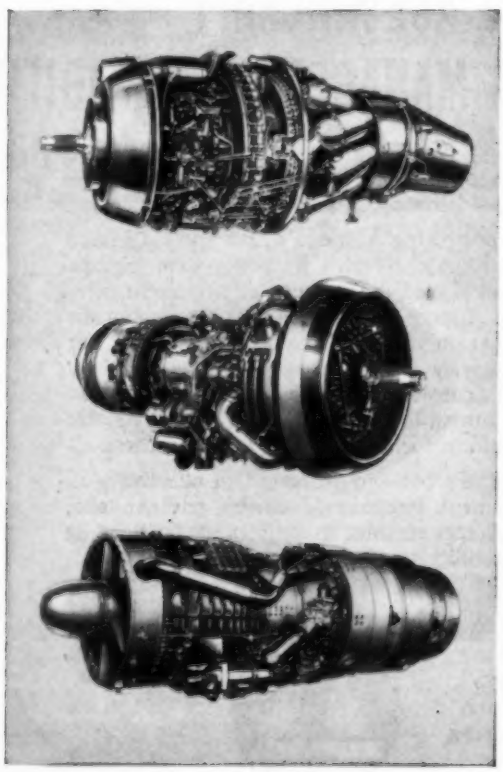
Circle No. 13 on Reader Service Card.

A NEW ERA

THE ROLLS-ROYCE CONWAY BY-PASS JET ENGINE

has now been granted a full certificate of airworthiness by the Air Registration Board at a minimum rating of 18,000 lb. thrust.

ROLLS-ROYCE EXPERIENCE IN THE AIRLINE OPERATION OF GAS TURBINES IS UNI



THE DART

—the first, and for four years the only prop-jet in airli service has flown over 6,000,000 hours. The Dart is curren operating at overhaul lives of up to 2,300 hours.

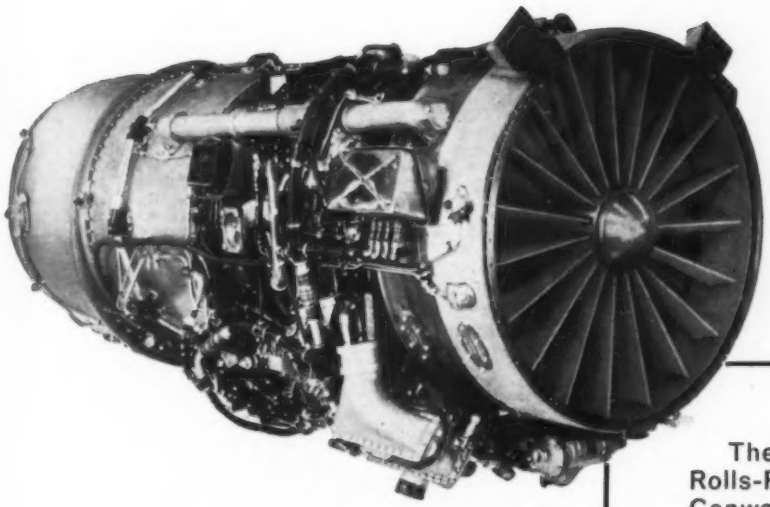
THE TYNE

—a most advanced prop-jet engine, is due to ent service in 1960 at ratings of 4,985, 5,525 and 5,730 e.h. It has a specific fuel consumption comparable with t latest compound piston engines.

THE AVON

—the first turbo jet on the North Atlantic route, and n in daily service, began scheduled operations with a approved overhaul life of 1,000 hours.

IN JET POWER



DEVELOPED FROM EXPERIENCE

The by-pass principle which Rolls-Royce have proved in the Conway engine is now accepted as the correct formula for all jet transport and for certain military applications.

The new RB.141 family of by-pass jet engines is based on seven years' development experience of the by-pass principle gained with the Conway and on six years' operation of other gas turbine engines in airline service. The first of this series has already been chosen to power the new British European Airways medium range jet airliner.

ROLLS-ROYCE ***GAS TURBINES***

ROLLS-ROYCE LIMITED, DERBY, ENGLAND

AERO ENGINES • MOTOR CARS • DIESEL AND GASOLINE ENGINES • ROCKET MOTORS • NUCLEAR PROPULSION

Circle No. 14 on Reader Service Card.

These Aircraft Are Army's Mobility

More than 5,000 aircraft give Army an unprecedented dimension in troop maneuverability. Geared to meet the needs of today's combat forces, whose urgent requirement for speed and flexibility becomes increasingly complex with each new development in modern warfare, these aircraft are called upon to perform a myriad of assignments.

Pictured on this page are new aircraft which are in various stages of research and development. These vehicles represent the efforts of the Army and the aircraft industry in providing the most advanced versions of vertical rising and short takeoff/landing aircraft. On the following pages are aircraft in inventory—the key to Army's mobility.

Bell XV-3

GROSS WT.—4,744 lbs.; EMPTY WT.—3,412 lbs. DIMENSIONS: L-30.33 ft., W-31.33 ft., H-13.63 ft. NORMAL FUEL CAPACITY—100 gals., 600 lbs. ENGINE—Model R-985-AN-1, Mfr.—P & W; No. used—1; normal hp—400, T/O hp—450. SERVICE CEILING—15,600 ft. CREW—1. CRUISE SPEED—136 knots. MAX. RANGE—480 n.m. MAX. RANGE PAYLOAD—467 lbs. CARGO/PASSENGER CAPACITY—217 lbs. plus 3 passengers (100 n.m. combat radius); 67 lbs. plus 2 passengers (max. range). PRIMARY MISSION—observation/utility. TYPICAL MISSIONS—undergoing development and engineering tests.

Doak VZ-4 Test Bed

GROSS WT.—2,585 lbs.; ENGINE—T-53-L-1 (Lycoming); PROP. DIA.—4 ft.; NO. PROPS—2; PROPS. INTERCONNECTED—yes; MAX. SPEED—200 knots (est.); ENDURANCE—1.1 hr. Aircraft has flown as conventional aircraft, in hover, and at various angles of duct tilt from the vertical position through to the horizontal position. Full conversion has not been demonstrated.

Piasecki VZ-8 Aerial Jeep

PAYLOAD—1,000 lbs. SPEED—25-50 knots. RANGE—25-50 n.m. The VZ-8 made its first successful hovering flight (untethered) in August 1958. Few details have been released on this aerial jeep, but Army specifications call a vehicle capable of performing most of the tasks of the conventional ground jeep, but incorporating the characteristics of a small helicopter.

Vertol VZ-2 Test Bed

GROSS WT.—2,710 lbs. ENGINE—T-53-L-1 (Lycoming); PROP. DIA.—9.5 ft.; NO. OF PROPS.—2; PROPS. INTERCONNECTED—yes. MAX. SPEED—134 knots (est.). The VZ-2 successfully completed full transition from vertical takeoff to cruise and back to vertical landing on 15 July 1958.

Aero Design L-26C

GROSS WT.—7,000 lbs.; EMPTY WT.—4,330 lbs. DIMENSIONS: L-35.4 ft., W-44.0 ft., H-14.8 ft. NORMAL FUEL CAPACITY—230 gals., 1,380 lbs. ENGINE—Model GSO-480, Mfr.—Lycoming; No. used—2; normal hp—320 each, T/O hp—340 each. SERVICE CEILING—24,300 ft. CREW—2. CRUISE SPEED—165 knots. MAX. RANGE—1,215 n.m. MAX. RANGE PAYLOAD—845 lbs. CARGO/PASSENGER CAPACITY—1,174 lbs. plus 4 passengers (100 n.m. combat radius); 45 lbs. plus 4 passengers (max. range). PRIMARY MISSION—command. TYPICAL MISSIONS—command aerial inspection of ground force areas, installations and march columns; limited cargo resupply.

Beech L-23D Seminole

GROSS WT—7,000 lbs.; EMPTY WT.—4,841 lbs. DIMENSIONS: L-31.5 ft., W-45.3 ft., H-11.3 ft. NORMAL FUEL CAPACITY—230 gals., 1,380 lbs. ENGINE—Model O-480-1, Mfr.—Lycoming; No. used—2; normal hp—320 each, T/O hp—340 each. SERVICE CEILING—26,300 ft. CREW—1. CRUISE SPEED—169 knots. MAX. RANGE—1,041 n.m. MAX. RANGE PAYLOAD—334 lbs. CARGO/PASSENGER CAPACITY—621 lbs. plus 5 passengers (100 n.m. combat radius); 134 lbs. plus 2 passengers (max. range). PRIMARY MISSION—command. TYPICAL MISSIONS—command aerial inspection of ground force areas, installations, and march columns; limited cargo resupply.

Cessna L-19A Bird Dog

GROSS WT.—2,165 lbs.; EMPTY WT.—1,613 lbs. DIMENSIONS: L-25.0 ft., W-36.0 ft., H-8.3 ft. NORMAL FUEL CAPACITY—42 gals., 252 lbs. ENGINE—Model O-470-11. Mfr.—Continental; No. used—1; normal hp—190, T/O hp—213. SERVICE CEILING—20,000 ft. CREW—1. CRUISE SPEED—78 knots. MAX. RANGE—585 n.m. MAX. RANGE PAYLOAD—81 lbs. CARGO/PASSENGER CAPACITY—65 lbs. plus 1 passenger (100 n.m.). PRIMARY MISSION—observation. TYPICAL MISSIONS—adjustment of artillery and mortar fire; battlefield surveillance; combat zone reconnaissance; limited aerial resupply; flight training.

DeHavilland AC-1 Caribou

GROSS WT.—26,000 lbs.; EMPTY WT.—14,665 lbs. DIMENSIONS: internal—L-28.9 ft., W-73.5 in., H-74 in. NORMAL FUEL CAPACITY—approx. 1,000 lbs. for 100 n.m. radius; ENGINES—Two, Model R-2000-7M2; Mfr.—P & W; Normal hp—1,200 max. continuous, T/O hp—1,450; SERVICE CEILING—24,900 ft. CREW—2. CRUISE SPEED—171 mph sea level; MAX. RANGE—1,173 n.m. MAX. RANGE PAYLOAD—870 n.m./4,914 lbs. CARGO/PASSENGER CAPACITY—up to 7,200 lbs. or 27 seats. PRIMARY MISSION—Cargo and troop transport within the combat zone.

DeHavilland L-20A Beaver

GROSS WT.—4,820 lbs.; EMPTY WT.—3,272 lbs. DIMENSIONS: L-30.4 ft., W-48.0 ft., H-9.0 ft. NORMAL FUEL CAPACITY—95 gals., 570 lbs. ENGINE—Model R-985-AN-1, Mfr.—P & W; No. used—1; normal hp—400, T/O hp—450. SERVICE CEILING—20,100 ft. CREW—1. CRUISE SPEED—118 knots. MAX. RANGE—600 n.m. MAX. RANGE PAYLOAD—730 lbs. CARGO/PASSENGER CAPACITY—309 lbs. plus 5 passengers (100 n.m. combat radius); 130 lbs. plus 4 passengers (max. range). PRIMARY MISSION—utility. TYPICAL MISSIONS—limited aerial troop transportation; limited aerial supply; emergency aerial evacuation.

DeHavilland U-1A Otter

GROSS WT.—8,000 lbs.; EMPTY WT.—4,716 lbs. DIMENSIONS: L-41.8 ft., W-58.0 ft., H-12.8 ft. NORMAL FUEL CAPACITY—213 gals., 1,278 lbs. ENGINE—Model R-1340-59, Mfr.—P & W; No. used—1; normal hp—500, T/O hp—600. SERVICE CEILING—18,500 ft. CREW—2. CRUISE SPEED—107 knots. MAX. RANGE—860 n.m. MAX. RANGE PAYLOAD—1,525 lbs. CARGO/PASSENGER CAPACITY—709 lbs. plus 9 passengers (100 n.m. combat radius); 121 lbs. plus 7 passengers (max. range). PRIMARY MISSION—light cargo. TYPICAL MISSIONS—combat zone resupply; transportation of troops within combat zone; emergency aero-medical evacuation.

Grumman AO-1 Mohawk

GROSS WT.—10,450 lbs.; EMPTY WT.—7,684 lbs. NORMAL FUEL CAPACITY—256 gals., 1,536 lbs. ENGINES—Two, Model T53-L-3s (Lycoming). MAXIMUM RATING—1,005 shp. CREW—Two. CRUISE SPEED—200 kts.; MAXIMUM SPEED—275 kts. PRIMARY MISSION—Observation.

Bell HU-1 Iroquois

GROSS WT.—5,400 lbs.; EMPTY WT.—3,464 lbs. DIMENSIONS: L-40.3 ft., W-10.2 ft., H-14.6 ft. (blades off). NORMAL FUEL CAPACITY—125 gals., 750 lbs. ENGINE—Model XT-53-L-1, Mfr.—Lycoming; No. used—1; normal hp—770, T/O hp—825. SERVICE CEILING—21,600 ft. CREW—1. CRUISE SPEED—100 knots. MAX. RANGE—200 n.m. MAX. RANGE PAYLOAD—911 lbs. CARGO/PASSENGER CAPACITY—111 lbs. plus 4 passengers or 3 litters. PRIMARY MISSION—utility. TYPICAL MISSIONS—troop personnel, special teams or crews and equipment and supplies; medical evacuation.

Bell H-13 Sioux

GROSS WT.—2,350 lbs.; EMPTY WT.—1,718 lbs. DIMENSIONS: L-27.3 ft., W-8.3 ft., H-9.5 ft. (blades off). NORMAL FUEL CAPACITY—43 gals., 258 lbs. ENGINE—Model O-435-23, Mfr.—Lycoming; No. used—1; normal hp—200, T/O hp—200. SERVICE CEILING—14,900 ft. CREW—1. CRUISE SPEED—61 knots. MAX. RANGE—182 n.m. MAX. RANGE PAYLOAD—159 lbs. CARGO/PASSENGER CAPACITY—2 external litters (special condition). PRIMARY MISSION—reconnaissance. TYPICAL MISSIONS—combat recon.; courier and liaison operations; front-line observation and fire control for artillery and mortar; emergency medical evacuation; emergency resupply; training.

Hiller H-23D Raven

GROSS WT.—2,369 lbs.; EMPTY WT.—1,767 lbs. DIMENSIONS: L-26.8 ft., W-10.0 ft., H-9.8 ft. (blades off). NORMAL FUEL CAPACITY—48 gals., 258 lbs. ENGINE—Model O-435-23-A, Mfr.—Lycoming; No. used—1; normal hp—250, T/O hp—250. SERVICE CEILING—11,700 ft. CREW—1. CRUISE SPEED—60 knots. MAX. RANGE—175 n.m. MAX. RANGE PAYLOAD—95 lbs. CARGO/PASSENGER CAPACITY—2 external litters (special condition) or 2 passengers. PRIMARY MISSION—reconnaissance. TYPICAL MISSIONS—combat recon.; courier and liaison operations; front line observation and fire control (artillery and mortar); emergency medical evacuation; emergency resupply; training.

McDonnell XV-1

GROSS WT.—4,800 lbs.; EMPTY WT.—3,651 lbs. DIMENSIONS: L-30.5 ft., W-26.0 ft., H-10.1 ft. (blades off). NORMAL FUEL CAPACITY—83.5 gals., 499.8 lbs. ENGINE—Model R-975-42, Mfr.—Continental; No. used—1; normal hp—525, T/O hp—550. SERVICE CEILING—11,800 ft. CREW—1. CRUISE SPEED—120 knots. MAX. RANGE—318 n.m. MAX. RANGE PAYLOAD—410 lbs. CARGO/PASSENGER CAPACITY—395 lbs. plus 1 passenger (100 n.m. combat radius); 210 lbs. plus 1 passenger (max. range). PRIMARY MISSION—observation. TYPICAL MISSIONS—"State of the Art" development. No plans to acquire more.

Sikorsky H-19D Chickasaw

GROSS WT.—7,522 lbs.; EMPTY WT.—5,651 lbs. DIMENSIONS: L-41.5 ft., W-11.0 ft., H-15.3 ft. (blades folded). NORMAL FUEL CAPACITY—175 gals., 1,050 lbs. ENGINE—Model R-1300-3, Mfr.—Wright; No. used—1; normal hp—700, T/O hp—700. SERVICE CEILING—11,800 ft. CREW—1. CRUISE SPEED—81 knots. MAX. RANGE—327 n.m. MAX. RANGE PAYLOAD—555 lbs. CARGO/PASSENGER CAPACITY—165 lbs. plus 5 passengers or 5 litters (100 n.m. combat radius); 155 lbs. plus 3 passengers or 2 litters (max. range). PRIMARY MISSION—utility. TYPICAL MISSIONS—to be used by aero-medical evacuation companies; presently used as interim light cargo helicopters in transportation companies; troop transportation. Used as transition trainer for single rotor.

Sikorsky H-34A Choctaw

GROSS WT.—12,020 lbs.; EMPTY WT.—7,684 lbs. DIMENSIONS: L-44.2 ft., W-12.0 ft., H-15.8 ft. (blades folded). NORMAL FUEL CAPACITY—263 gals., 1,578 lbs. ENGINE—Model R-1820-84, Mfr. Wright; No. used—1; normal hp—1,275, T/O hp—1,525. SERVICE CEILING—8,900 ft. CREW—2. CRUISE SPEED—90 knots. MAX. RANGE—233 n.m. MAX. RANGE PAYLOAD—2,290 lbs. CARGO/PASSENGER CAPACITY—112 lbs. plus 12 passengers or 8 litters (100 n.m. combat radius); 90 lbs. plus 11 passengers or 8 litters (max. range). PRIMARY MISSION—light transport. TYPICAL MISSIONS—combat zone resupply; transportation of troops within combat zone; emergency aero-medical evacuation.

Sikorsky H-37A Mojave

GROSS WT.—29,157 lbs.; EMPTY WT.—19,985 lbs. DIMENSIONS: L-64.2 ft., W-27.4 ft., H-22.0 ft. (blades folded). NORMAL FUEL CAPACITY—400 gals., 2,400 lbs. ENGINE—Model R-2800-54, Mfr.—P & W; No. used—2; normal hp—1,900, T/O hp—2,100. SERVICE CEILING—9,400 ft. CREW—3. CRUISE SPEED—95 knots. MAX. RANGE—120 n.m. MAX. RANGE PAYLOAD—6,000 lbs. CARGO/PASSENGER CAPACITY—22 passengers or 21 litters (100 n.m. combat radius); 1,400 lbs. plus 23 passengers or 22 litters (max. range). PRIMARY MISSION—medium transport. TYPICAL MISSIONS—combat zone resupply; transportation of troops within combat zone; emergency aero-medical evacuation.

Vertol H-21C Shawnee

GROSS WT.—13,500 lbs.; EMPTY WT.—9,090 lbs. DIMENSIONS: L-52.6 ft., W-13.3 ft., H-16.7 ft. (blades folded). NORMAL FUEL CAPACITY—300 gals., 1,800 lbs. ENGINE—Model R-1820-103, Mfr.—Wright; No. used—1; normal hp—1,275, T/O hp—1,425. SERVICE CEILING—8,900 ft. CREW—2. CRUISE SPEED—85 knots. MAX. RANGE—300 n.m. MAX. RANGE PAYLOAD—2,064 lbs. CARGO/PASSENGER CAPACITY—64 lbs. plus 13 passengers or 12 litters (100 n.m. combat radius); 64 lbs. plus 10 passengers or 9 litters (max. range). PRIMARY MISSION—light transport. TYPICAL MISSIONS—combat zone resupply; transportation of troops within combat zone; emergency aero-medical evacuation.

World's newest, fastest long-range jetliner...

The Boeing 707 Intercontinental, shown above on its first flight, will bring a new order of performance to the air routes of the world when it goes into service later this year.

This new Boeing jetliner has greater range and payload capabilities than any other jet transport. With a range in excess of 5,000 miles with full payload, it is designed to fly nonstop over the longest stages of airline routes. Cruise speed is more than 600 miles per hour.

The Intercontinental is a longer-range sister ship of the 707 Stratoliner. Although it is the world's newest long-range jetliner, the Intercontinental is a *proved* aircraft . . . backed by more than 4½ years

...e Boeing 707 INTERCONTINENTAL

...ight test...g of the 707 prototype, as well as ...ensive te... programs completed by production ...s. In serv...e since last October, the 707 Strato... has bee... demonstrating the unparalleled pas...ger-appea... of Boeing jets. Public response, in ... words o... the operating airline, is "the most ...usiastic ... a new airliner in aviation history."

*These airlines have ordered 707 and shorter-range 720 jetliners (*indicates Intercontinental purchasers):*

*AIR FRANCE • *AIR INDIA • AMERICAN • *B.O.A.C.
BRANIFF • CONTINENTAL • CUBANA • *LUFTHANSA
*PAN AMERICAN • QANTAS • *SABENA • *SOUTH AFRICAN
TWA • UNITED • VARIG • *Also* MATS

BOEING 707 Intercontinental

Circle No. 15 on Reader Service Card.

AIR TRANSPORT PROGRESS Issue

The accent falls on the vital Air Transport Industry in the special May issue of *Airlift Magazine*. Here's an exceptional opportunity for you to direct your sales story to the core of the Air Transport Market . . . to the buying factors who will read then keep this important issue as a year 'round source of reference.

Dynamic Editorial Coverage

Offering the most comprehensive coverage of air transport ever undertaken by a business publication, staff experts of *Airlift Magazine* will report, analyze, and forecast such facets as

- U. S. Industry Roundup . . . 1958: sad prelude to turbines; recession, labor and fare pinch profits despite record revenues.
- Air Transport Equipment . . . first jets enter operation, spur high load factors. A report of first results.
- An exclusive financial report on the air transport market by Selig Altschul, financial editor.
- Air Cargo . . . revenues up despite slight drop in traffic; strikes take toll of year-end rush.
- The International Picture . . . analyzed by *Airlift Magazine's* international editors Anthony Vandyk and Jean Marie Riche.
- A bible of air transport statistics . . . operating and maintenance costs; transports in service; traffic ratings; fuel and oil consumption; all based on exclusive *Airlift Magazine* survey.

Plus the 20th Edition of the Air Transport Association's FACTS AND FIGURES.

April 13 Closing Date

Plan now to include the Air Transport Progress Issue of *Airlift Magazine* in your advertising schedule. Complete editorial coverage plus year 'round selling provides a major advertising opportunity in a major aviation market . . . the Air Transport Industry. For additional information, contact the nearest regional advertising office.

NEW YORK: 17 EAST 48TH STREET—PLAZA 3-1100 • WEST COAST: 8929 WILSHIRE BLVD., BEVERLY HILLS, CALIF.—OLEANDER 5-9161 • CHICAGO: 139 N. CLARK STREET—CENTRAL 6-5804 • CLEVELAND: HANNA BLDG., 1422 EUCLID AVENUE—PROSPECT 1-2420 • FLORIDA: 208 ALMERIA AVENUE, CORAL GABLES, FLA.—HIGHLAND 4-8326 • PARIS: 11 RUE CONDORCET, PARIS (9E), FRANCE—TRU 15-39 • GENEVA: 10 RUE GRENUS, GENEVA, SWITZERLAND—TEL: 321044 • LONDON: NORALL & HART, 28 BRUTON STREET, LONDON W. 1, ENGLAND—GROSVENOR 8356 TORONTO: ALLIN ASSOCIATES, 12 RICHMOND STREET, EAST, TORONTO, CANADA—EMPIRE 4-2001 • MONTREAL: ALLIN ASSOCIATES, 1487 MOUNTAIN STREET, MONTREAL, CANADA—VICTOR 5-6898

AMERICAN AVIATION PUBLICATIONS, INC.

World's Largest Aviation Publishers

1001 Vermont Avenue, N.W., Washington 5, D.C.

Army Is Getting Things Done With Turbines

Allison, Lycoming, GE, Solar Go to Bat

"Methodical" is the word we used last year to describe Army's turbine engine program, and the aptness of the term has been proved. The things Army set out to do are being done—and right on schedule.

Big event of the year was the award to Allison Div. of General Motors Corp. of a $3.2 million fixed price contract calling for development of the T63, a 250-shp engine. Actually, development expenses will amount to some $6.4 million, but Allison feels that the potential commercial market for an engine of this class justifies splitting the cost with the government. In fact, the company's conviction that there's a big commercial future for such a powerplant is demonstrated by the fact that it was running a full-scale T63 compressor well before the contract was awarded.

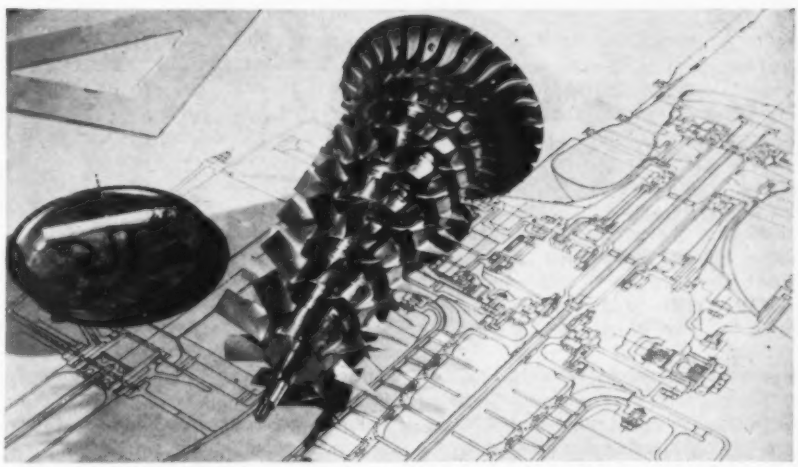
Army's contract with Allison covers development of both the T63-A-1 turboprop and T63-A-3 helicopter versions through 150-hr. qualification testing. Two engines will be delivered after passing 50-hr. preliminary flight rating tests scheduled for completion in September, 1960. Three more engines will be delivered after the 150-hr. qualification tests have been run off one year later. Army probably will use these engines for further testing at WADC.

Parts Flow In

The joint Army/USAF mockup board met last November and, since then, development has been progressing steadily. Allison has been testing a full-scale combustor, control parts have been undergoing bench testing, gear box parts have been coming in from the vendors since December, and turbines since the end of January.

The full-scale compressor sections Allison is running are equipped with removable vanes to simplify experimental work. In tests to date, results have been within 2% of predicted values, indicating that the company is on the beam performancewise. In production, disc and vanes of each stage probably will be cast integrally. This feature is only one of several being studied in the interest of cost reduction.

Eventually, Allison expects to be able to sell the engine for around $15 per hp., a price tag which will be competitive with that of piston engines of the same power. To this end, great effort is being expended in the development of new, low-cost manufacturing methods. Studies include use of plastics for compressor discs, compressor cases, some gears, compressor stator blade carrier rings, and other applications not temperature limited. Possibility of using sheet metal stampings for the complete compressor rotor section also is being investigated. Extensive use of honeycomb structures, and application of chemical milling techniques are being researched.



TINY ALLISON T63 has seven stages of axial-flow compression and one of centrifugal flow. Engine weighs only 100 lbs., but produces 250 shp. Allison says it will be able to sell the engine at $15 a pound.

A big feature of the T63 is its maintainability. The compressor section can be removed as a unit from the front of the centrally located gear box simply by removing three bolts and disconnecting an oil line. Similarly, the hot section can be removed in one piece from the back of the gear box. Air is passed from the compressor to the single combustion chamber through two tubes which embrace the gear box section. The company says no single assembly weighs more than 14 lbs.

Aircraft Not Selected

Last year, Army said it needed the 250-shp engine for use in liaison aircraft, aerial jeeps, and two-place helicopters, and this still stands. As yet, no decision has been made as to which particular aircraft will use it as a standard powerplant. In the meantime, Allison has started negotiating to set up a flight test program and, accordingly, has asked Army to provide a twin-engine airplane and a helicopter on bailment.

The company has submitted a list of aircraft it considers suitable in both Army and Air Force inventory, and the installation chosen by Army would be purely an engine test bed, and not a prototype setup. If Allison repeats its earlier flying test bed practice, the turboprop test installation will be made in the nose of the twin-engine airplane. This would be quite feasible, since the engine weighs only 100 lbs., and measures a diminutive 38.5″ long x 19.5″ high x 15.8″ wide. The helicopter version weighs 10 lbs. less, and is about 4″ shorter.

Engine Has Versatility

Aside from its application to Army and other military and commercial aircraft, Allison foresees a big future for the T63 as a power unit for lightweight ground support equipment. The company feels the engine will be widely used in air-conditioning systems, generator sets, hydraulic power supplies, and so forth.

Army's turbine engine production

Army Aims For Light Turbine Standardization

plans presently are focused on Lycoming's T53-L-1 turboshaft and T53-L-3 turboprop engines. To date, Army has taken delivery of 29 prototype and 47 production -1s. In addition, Army has ordered 251 -1s and 143 -3s, largely for installation in Bell's HU-1A Iroquois helicopter and Grumman's AO-1 Mohawk high-performance observation plane, respectively. Over-all military procurement of both models amounts to 576 engines, with delivery to be completed by the end of 1960. Price is down to around $65,000 apiece from $125,000 for initial production engines last year, and estimated additional procurement during FY 1960 of another 450 to 500 engines may lower the price again to some extent. Production figures include -1s used by Kaman to power H-43B crash rescue helicopters on order by Air Force.

Grumman Receives One T53

The T53-L-1 completed 150-hr. qualification testing in April 1958. The T53-L-3 turboprop completed 50-hr. preliminary flight rating tests in June 1958, and should complete 150-hr. qualification testing next month. One prototype -3 engine was shipped to Grumman early last month for final installation checks in the AO-1, and 50-hr. flight engines will be shipped early next month when the first flight of this aircraft is scheduled to take place.

In the past year, Army has put about $3½ million into T53 development, bringing total development costs for both models to an economical figure of some $23½ million.

Some of the $3½ million has been spent on general product improvement, and, during this period, military rating of the -1 was increased from 825 to 865 shp. Normal rating still is 770 shp. However, a good portion has been assigned to development of the T53-L-5, a 960-shp helicopter version of the -3 turboprop. With development well under way, 150-hr. qualification testing of the -5 is scheduled for completion within the next nine months. Following qualification testing, -1 engines in the field almost certainly will be replaced with -5s. For this reason, -1 spares procurement is being held to a minimum. Since 30% to 40% of -1 parts are applicable to the -5 engine, replaced -1s may well be modified to the -5 configuration. Almost 95% of T53-L-3 parts are usable on the -5, so the program fits in well with Army's desire to achieve as much standardization as possible in the field. The -5 has the same gear box as the -3, but some of the gears have been changed to give 6,000 rpm output. Also, of course, the power control setup is somewhat different.

Army has put no additional funds into the Lycoming T55 program during the past year, so total development costs to date amount to $14 million for both the T55-L-1 turboprop and T55-L-3 helicopter versions. The 1,600-shp -1 completed 50-hr. preliminary flight rating tests in December 1957, and one engine has been shipped to WADC for altitude testing. One other has been shipped to Aeroproducts for propeller development work. Plans to install this turboprop in the de Havilland Caribou twin-engine transport, designated YC-1B by Army, have been shelved.

Use of T55 Undecided

Completion of 50-hr. preliminary flight rating tests on the T55-L-3 is imminent, but there's no immediate application in sight. Army is not sure that the engine is modern enough to fit in with its plans for the future. Weight is alright, but it's felt that specific fuel consumption could be bettered. Development work will be slanted at improving the engine in these areas so that if, for example, funds become available to go ahead with the three-ton Chinook helicopter project, the engine will be in good shape for use as its powerplant.

In the 55-shp field, Solar has completed 50-hr. tests on the T66, and Army has put the engine on the shelf for the time being. This engine was intended for use in one-man helicopters or ducted fan platforms but, at present, there is no operational requirement for such a machine. There's still a lot of work ahead before a suitable one-man, platform-type aircraft is developed.

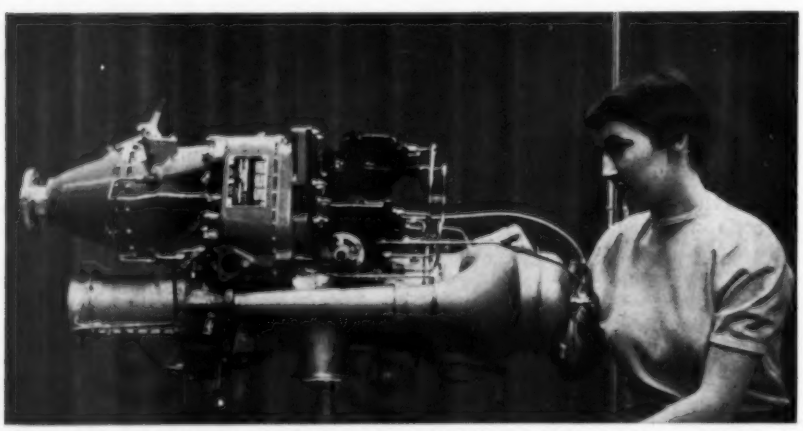
So, the one portion of the power spectrum still to be filled in the turbine engine program is the 500-shp area. Army has received several good verbal offers from engine manufacturers who are prepared to develop a 500-shp engine on an "industry participation" basis as Allison did with the T63. But, though Army is intrigued by these offers, it still must make the decision between standardization on the one hand, and probably somewhat better performance on the other.

T63s May Be Twinned

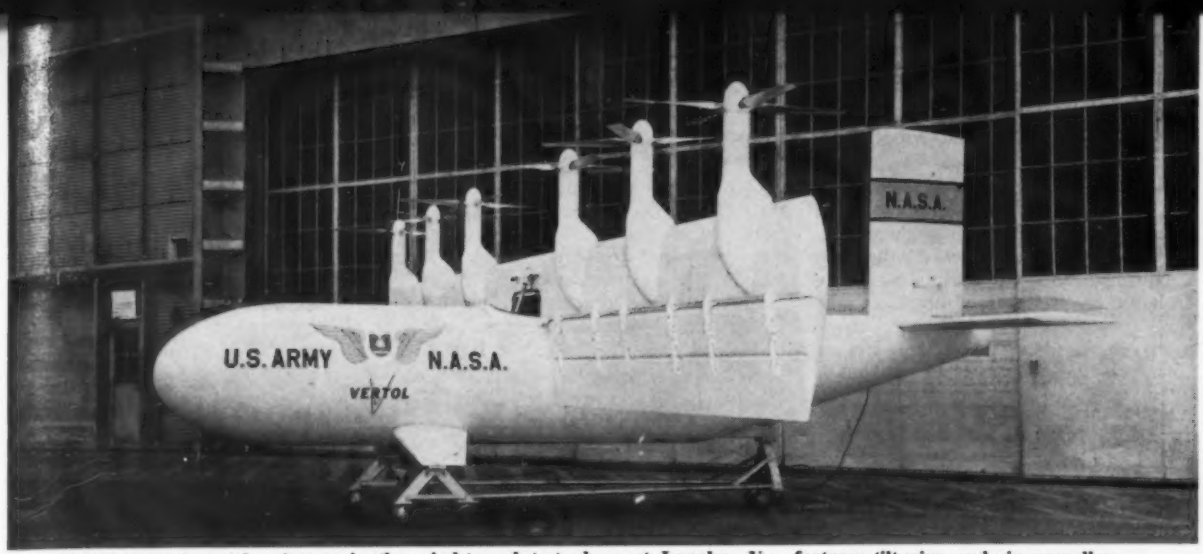
Standardization would be achieved by twinning 250-shp T63s, and there are several other advantages to this approach. Army's requirement for STOL and VTOL aircraft automatically establishes the need for a wide, but economical, power range. Cruising a turbine engine at low power settings is uneconomical. The twinned-engines approach would permit takeoff using both engines, and cruising or loitering on one engine with a higher, more efficient power setting.

Cost of development of a 500-shp engine would be eliminated, and increased production of 250-shp engines would lower unit costs. Logistics problems would be eased considerably. All-in-all, it's a good bet Army will decide upon twinned 250-shp engines but, either way, the decision can be expected early in fiscal 1960.

Last item on Army's engine R&D list last year was a $250,000 study being made by General Electric's Aircraft Gas Turbine Div. to guide future development of engines for VTOL aircraft. This study has been completed, and Army would like to proceed with bench-testing of hardware applicable to the most promising concept the company evolved. The decision on whether or not to go ahead will be balanced against other high-priority budget considerations, and, again, may be made in fiscal 1960.



COMPLETELY ASSEMBLED, THE T63 is slightly over 3½ ft. long, and 1½ ft. wide. A helicopter version of the engine will weigh only 90 lbs., and measure 4 in. shorter. Rather than develop a 500 shp engine, the Army is planning to hook two T63s in tandem, thus cutting production costs and easing supply problems.



Vertol/NASA project (above) now in the wind-tunnel test phase at Langley, Va., features tilt-wing and six propellers.

Army Looking For Vertical Lift

After beginning with almost no background data, the Army VTOL and aerial jeep programs have reached the most productive stage of development —flight tests. Four VTOLs and one aerial jeep have flown to date and more are scheduled to fly within the next few months.

Developed under Army Transportation Research and Engineering Command (TRECOM) contracts, the experimental aircraft now being studied are all aimed at gathering information for a production prototype. The Army hopes this effort will result in three or four machines, sized to do a specific job, or set of jobs. VTOL projects are designed to yield a light-load-carrying utility airplane, with STOL types handling the heavier duties.

NASA tests on tilt-wing VTOL designs revealed a number of stability and control problems. In hover, wind tunnel models showed unstable pitching oscillations, but the addition of a pitch jet control could be damped out without reverting to artificial stabilization. Rolling motions were found to be controllable in hover by varying the total pitch of the propellers differentially.

In transition from hover to normal flight, nose-up pitch encountered was found acceptable, with restrictions on the center of gravity range.

The VTOL aircraft now flying are being used to further investigate wind tunnel findings.

The requirements for aerial jeeps were not so general, however. Army stated the jeep configuration must allow loading of four vehicles in a C-130 aircraft, have a 1,000 lb. payload, and cruise at 50 knots for a one-hour period.

Perhaps the toughest requirement was that stating the jeep should be as simple as possible to operate and maintain—simpler to fly than a helicopter, and capable of being serviced by a person slightly more skilled than an auto mechanic.

When the companies receiving aerial jeep contracts started work, they found they were beginning from scratch. Although the principle of the ducted propeller had been known for years, no one had tried to apply it to such a vehicle.

When development reached the wind-tunnel stage, another variety of problems was waiting; all tied to stability and control.

It was found that a large nose-up pitching moment developed in forward flight. This problem was especially severe for the shrouded propeller, and on designs with the propellers placed in tandem, an additional increment of pitching resulted from the effect of the downwash of the front propeller acting on the rear one. Designs using turning vanes beneath the shroud to prevent excessive forward tilt during level flight also had an aggravated pitch since the forward force acting on the vanes and acting below the center of gravity produces nose-up moments.

To get around these problems, the rear shroud on the Piasecki was raised above the front, thus raising it out of the downwash. By using turning vanes on the forward shroud only, designers favoring this guidance method have provided a compensating nose-down pitching moment.

Another forward flight problem of flying jeeps has been an unstable variation of pitching moment with angle of attack. This results from the fact that the center of gravity must be on the center of thrust for best efficiency in hovering, but at the angle of attack of forward flight, the center of gravity moves ahead of this point.

In hovering, pitch and roll oscillations were found to create a very unstable condition. Yaw stability was shown to be no problem in still air,

Doak's VZ-4 pictured here is considered one of the most promising of Army's VTOL aircraft. Has already flown at altitudes of 5,000 feet.

but unsymmetrical gust loads produce considerable yaw moments.

At the conclusion of its wind tunnel tests, NASA felt that the idea of an aerial jeep was definitely feasible from the standpoint of stability and control. Artificial stabilization, through a number of well-proven devices, was believed capable of rendering the machine controllable in all stages of flight.

RUN-DOWN OF VTOL AND AERIAL JEEPS

Vertol VZ-2 is one of the front-running VTOL testbed designs.

The Vertol is a tilt-wing with a Lycoming T53 engine driving two three-blade rotors and two four-blade tail control fans.

Pilot controls consist of a conventional stick and rudder combination, plus a collective pitch lever and a variable-speed wing tilt switch.

In hovering flight, vertical motion is controlled by varying the collective pitch; roll control is by differential collective pitch, obtained by moving the stick from side to side; pitch control is achieved by varying the tail fan blade pitch; and directional control comes from the yaw fan located on the right side of the tail, controlled with the rudder pedals.

In converting from hover to forward flight in the Vertol, the control system shifts automatically from helicopter to airplane type.

Initial flight tests of the Vertol showed some problems arising from the control system. Oversensitivity in the collective pitch caused some marginal control conditions during hovering, but was corrected by a change in the linkage. First conversions to forward flight showed a yaw control problem at high wing incidence angles. To correct this, the yaw fan was moved further outboard to provide a more symmetrical response, and the total yaw fan blade angle was increased.

Presently, the aircraft is undergoing still further flight tests before being turned over to the Army.

Bell XV-3 Convertiplane is one of the oldest VTOL projects still on the active list. The program was originally a joint USAF-Army effort, but the present tests are being conducted solely on Army funds.

The XV-3 features twin two-blade rotors mounted at the tips of the short wings. The rotor is positioned vertically for VTOL operation and rotated for forward flight. During the 10 to 15 seconds required for conversion, the lift load is transferred from the rotors to the wing.

First model of the XV-3 was lost early in the program because of wing-flexing problems created by the rotor system. After the accident, Bell made extensive design changes, adding a new flap arrangement, revising the center-section air intake fairing and stiffening the rotor controls.

The airplane was then put in the NASA wind tunnel to test these changes and give the test pilots experience in performing conversions from hover to forward flight.

These tests showed that a flap setting of approximately 20 degrees was optimum for the airplane, with the stall speed reduced to about 85 knots, and an improved fuselage attitude during conversion. The revised center-section cowling corrected a flow separation problem encounted on the earlier version, and to increase engine-cooling air flow.

The stiffened controls eliminated the blade flutter that contributed to the loss of the first airplane.

In conducting the first conversions from helicopter to airplane regime, a directional instability problem was encountered, but has been eliminated by the addition of a vertical fin.

Future of the XV-3 is uncertain at present as the funds allocated to the program have been exhausted and the Army is not planning to add any more.

Ryan Vertiplane program was put in doubt last month when airplane crashed during test flight. Cause of the accident was not related to the airplane design, but has been laid to a failure in the propeller pitch control. Damage is now being evaluated. The Vertiplane was a deflected slipstream type, with large flaps and endplates at the wingtips. It was powered by a Lycoming T53.

Fairchild VZ-5FA is also a deflected slipstream airplane. Work on the airplane is now resuming after a brief stoppage created by lack of funds. Said to be 65% complete, it should fly within four to six months. Powerplant for the airplane has not been chosen, but will be either a Lycoming T53 or General Electric T58.

Doak Model 16 is perhaps the most promising of the VTOL airplanes now flying. It is said to have flown at altitudes above 5,000 ft. in its Edwards AFB tests, which are still under way.

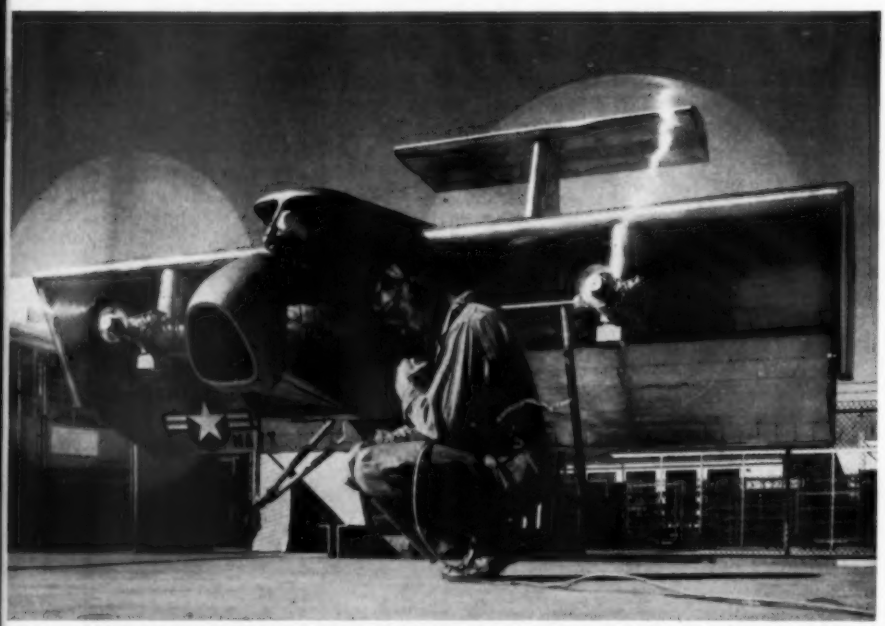
The Doak is a fixed-wing airplane with tilting ducts mounted at the tips. Control surfaces are conventional aileron, elevator, and rudder, with an electronic-mechanical interlock system.

The interlock system controls the angle of vanes set inside the duct for roll control during hovering and VTOL operations. Just aft of the vanes is an eight-blade propeller driven by the Lycoming T53 buried in the fuselage.

Power is transmitted by a four-inch aluminum alloy floating shaft through a hollow stator just behind the propeller plane. The stators are twisted slightly to straighten out the airflow.

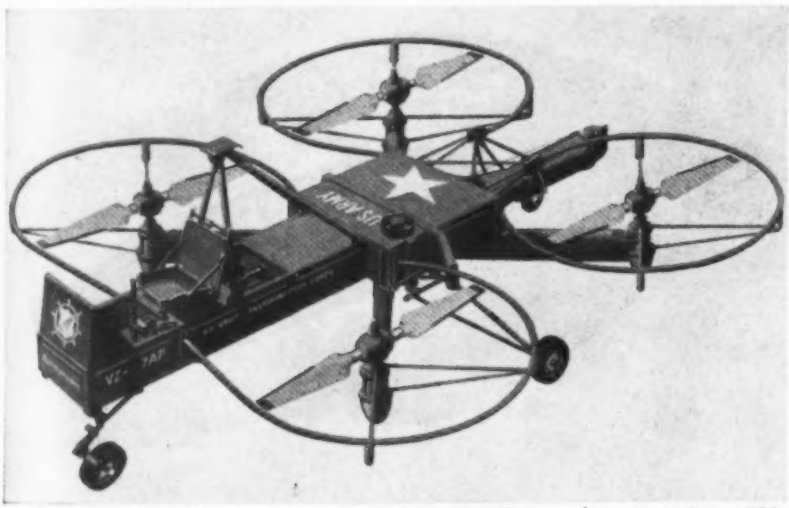
Power takeoff is from a self-lubricating T-box and two right-angle gear boxes. Gear boxes are cooled by drawing high-pressure air from a region near the propeller hub and venting through the nozzle area aft of the stator section in each duct.

Duct assembly is of aluminum alloy with a fiberglass nose ring. Inside diameter of the duct is approximately four feet, leaving a very close tolerance



RYAN VERTIPLANE shown undergoing ground tests prior to its accident last month at Moffett Field, Calif. Notice large flap and wingtip endplates.

Another Vertol tilt-wing project is the VZ-2, (above). Powered by a Lycoming T53 engine, aircraft has two-three-blade rotors and two tail control fans.



Aerophysics VZ-7AP is nearing completion and will soon enter test phase. This vehicle has four counter-rotating propellers. Powerplant is a Turbomeca Artouste.

for the propeller, which is set two feet back into the duct to prevent separation of the airflow.

Design gross weight of the Doak is said to be 2,600 lbs.

Vertol/NASA Project is a wind tunnel program just getting under way at Langley, Va.

Constructed under a $227,000 contract for VTOL/STOL studies, it has a tilting wing and six propellers driven by a 1,000 hp variable-frequency electric motor. Double single-slotted flaps cover approximately 60% of the chord.

For multiple-design studies, detachable panels are provided which allow testing of the model with two, four or six propellers.

AERIAL JEEPS

Piasecki VZ-8 "Sky-Car" is the only aerial jeep flying to date. It has undergone 25-30 hrs. of tethered and free-flight tests.

A "two-holer," the VZ-8 has two Lycoming O-360 engines located between the rotors, driving inward to a central gear box which distributes power.

Rotor ducts are made of aluminum alloy skin and stiffeners. The structure between the ducts which supports the weight of the engines and passengers is of riveted aluminum construction.

For proprietary reasons, Piasecki is not releasing any information about the transverse and inboard stators of the ducts.

Drive system consists of linkage connecting the engines into a central transmission and then on to the rotors. To enable either engine to drive the entire system in case one fails, an overrunning sprag clutch is used to connect the drive system to the powerplants.

The central transmission is made up of spiral bevel gears. The shaft to the rotors passes through the transmission and carries one gear.

Flight controls are similar to those used in a conventional helicopter with a collective pitch lever and twist-grip throttle, a stick for control about the longitudinal and lateral axes, and rudder pedal for directional guidance.

The VZ-8 is now preparing for flight tests at increased altitudes and flights at higher speeds to determine its response under these conditions.

Chrysler Trecopter, designed by Chrysler's Defense Engineering Group, is nearing completion and is slated to begin ground tests and limited flight tests within the next 60 days.

The Chrysler jeep uses rigid rotors—that is there is no blade flapping, and the shaft takes the applied bending moments. Because of this rigid rotor system, collective and cyclic pitch controls have been replaced by a "venetian blind" system of louvers to provide trim about the longitudinal axis. Roll control is provided by vanes located aft of the rotor in the duct outlet, and directional control is provided by a single vane.

When the control stick is moved back and forth, the louvers controlling pitch move in the duct inlet to give appropriate pitching moments.

Gross weight of the Chrysler model will be around 2,000 lbs. It is 23 ft. long, and about 10 ft. wide.

Engine is a 360 hp Lycoming turning at 3,200 rpm. Reduction gearing at the propeller takes this down to 1,550 rpm.

Aerophysics VZ-7AP is at approximately the same stage of development as the Chrysler project. It is scheduled to be completed within about three months, and will begin tests soon after.

The only "four-holer" under development, the Aerophysics jeep uses counter-rotating propellers at each corner of the platform.

Powerplant is a Turbomeca Artouste IIB shaft turbine developing approximately 425 shp. Turbine exhaust is directed backward to give jet thrust. A later version of the Artouste engine, with 600 shp, is expected soon. With this powerplant, the useful load of the jeep should be increased to about 1,615 lbs. compared to its present 555 lbs.

Transmission system reduces the 6,000 rmp turbine speed to 2,150 rpm at the propellers. The central gear box has an input shaft with two bevel gears driving two intermediate shafts. These shafts run diagonally to the propeller gear boxes where spiral bevel gears are used.

Control of forward and sideways motion is indirect, using the pitching and rolling controls, respectively. The vehicle climbs and descends by use of the collective pitch control of the four rotors. Pitch and roll is obtained by the side-to-side movement of the stick, which feeds differential pitch to the propellers. Directional control comes from foot pedals connected to a rudder in the turbine exhaust.

brings unprecedented

Latest military helicopter achieves new standards of performance; carries Bristol's extensive experience of power transmission into twin-rotor field.

The Bristol 192 introduces significant advances in twin-rotor flight. Extremely efficient performance; completely reliable on one engine only; a markedly satisfactory power/weight ratio.

It offers a high degree of serviceability. For Bristol's long experience of helicopters, particularly in the vital areas of power transmission and rotor-head design, has been embodied in the 192, to give reliability and ease of maintenance beyond that of any competitor.

Answers stringent safety and load requirements

Ordered for the RAF, the 192 has been designed to meet military requirements, including the ability to lift 25 troops, or 6,000 lb distributed freight.

Its two Napier Gazelle 1,300 shp "free turbine" engines, interconnected to keep rotor-phasing true and for single-engine safety, deliver sea-level power up to 6,000 ft, and

OL 192

safety and serviceability

provide ample power reserves for emergencies. In fact, with one engine driving both rotors, the 192 climbs at more than 1,200 ft/min, and can make a safe, fully controlled landing.

The 192 cruises at 120 knots; has a maximum range of 400 miles. It hovers at 8,000 ft, without ground effect, reaching service ceiling at no less than 13,250 ft.

Full production of the 192 began from the drawing-board, a policy made practicable by Bristol's unequalled experience—gained through the experimental 173 and the Sycamore.

BRISTOL
Aircraft
BRISTOL AIRCRAFT LIMITED · ENGLAND

THE BRISTOL AEROPLANE COMPANY (USA) INC
400 PARK AVENUE, NEW YORK, NY

Circle No. 17 on Reader Service Card.

ENGLISH CHANNEL CONQUERED BY AIR!

FLIGHT INAUGURATES FIRST SCHEDULED AIR SERVICE BETWEEN PARIS AND LONDON

Lucien Bossoutrot

London, Eng., Feb. 8, 1919—The first international passenger flight became aviation history today when Lucien Bossoutrot successfully landed his Farman "Goliath" aeroplane at Kenley Aerodrome after a 2½-hour flight from Paris with 13 persons aboard. Captain Bossoutrot and his co-pilot reported that the bimotor biplane performed perfectly throughout the 178-mile trip. The flight fulfilled the dream of Louis Blériot, who ten years ago made the first cha[illegible]

FIRST IN INTERNATIONAL AIR TRAVEL! It's as true of Air France today as it was 40 years ago when Lucien Bossoutrot made the first international passenger flight from Paris to London. Air France still follows this great tradition of French leadership in aviation. Today Air France offers the most non-stop flights between New York and Paris. This spring Air France will fly the fastest jet service in Europe and the Middle East. And next year Air France will cover the world's largest route network with one of the largest jet fleets in the world.

AIR FRANCE

WORLD'S LARGEST AIRLINE/WORLD'S FIRST INTERNATIONAL AIR SERVICE

Ft. Rucker Is Heartbeat of Army's Aviation

- **Base foreshadows growth of new battle concepts**
- **Crack teams visualize special equipment needs**
- **R&D center breeds the best in maneuverability**

FT. RUCKER, ALA.—This thriving post in southernmost Alabama is the mecca of Army aviation. Often called the Army's answer to Edwards AFB and Pensacola, Ft. Rucker houses the Army Aviation School and the operational portion of aviation research and development.

The Army Aviation School came here in August, 1954 from Ft. Sill, Okla. where it had run out of growing room, and, since relocating, its staff and faculty have burgeoned from 300 to its present level of 1,050. Where 3,026 students were graduated the first year, 4,820 were turned out in 1958.

Today Ft. Rucker covers 60,000 acres, and construction is still under way at a near crash-program tempo. New permanent-type buildings are replacing the temporary barracks, and 650 units of base housing have sprung up, with more on the way. Center of all flying activity is modern new Cairns Field, recently re-named for the late Brig. Gen. B. S. "Bugs" Cairns, former post commandant who was killed last December in a helicopter accident.

Research and development phases at Ft. Rucker are designed to cover every problem area encountered in the rapid-changing aviation operations of the Army. The specialized groups are: Combat Development Office, Aviation Development Board, Transportation Aircraft and Test Support Activity, Signal Corps Aviation Test and Support Activity, U.S. Army Board for Aviation Accident Research and the Human Resource Office.

Combat Development Office is assigned the task of visualizing the battlefield of tomorrow. The office must decide what new equipment will be needed on that battlefield, how it can best be used and how it fits into the overall weapons picture.

Armed helicopters is one of the biggest projects in the office today. Originally known as "Sky-Cav", the office has re-evaluated the program to more clearly define its function.

As it was first set up, the use of armed helicopters meant different things to different people; armored commanders felt the helicopters should be used for tank support and escort, while others thought they should be organized as advanced strike forces to ferret out enemy troops in forward positions, and still others wanted them to be a means of self-protected logistical support.

To end this confusion, Combat Development reorganized the project and dubbed it the Aerial Reconnaissance Company. Its mission was defined to be provision of rear-area security, and light reconnaissance combat.

The helicopters are armed with 30 and 50 caliber machine guns, and several WWII vintage missiles, mostly of the fin-stabilized type designed for launching into the high-velocity slipstream of fighter planes.

Combat zone air traffic control is another high-priority project with Combat Development. System being studied is a beacon-to-beacon type, with non-directional homing beacons located in the area of major-unit airfields, and radar surveillance at rear-area locations.

Combat Development visualizes an airfield in each corps area, complete with an operations center. A data link will provide clearance from point-to-point through a central control center, rather than routing aircraft through intermediate points as in the present airways system.

Equipment has been developed under ARDC Project Two Wheels which is similar to that required for mobile air traffic control. It consists of a control tower that can be carried into the field by helicopter and set up in less than 30 minutes. Unit contains receivers, telephone control panels, wind indicators, altimeters, and signal equipment.

Since battlefield air control is under Air Force command, the Army has set 7,000 ft. as the limit of its activity.

Other problems being studied by Combat Development are:

Use of helicopters as fuel tankers for resupply of moving or isolated units. One plan of doing this uses fixed-wing aircraft to refuel the helicopters, and rubber packages for dropping the fuel to the ground.

Airborne surveillance sensors, target acquisition with camera, radar, and infra-red. Objective of this program is to increase the availability of reconnaissance information, since the use of aircraft as observation platforms could be improved greatly if time between taking a photograph and its interpretation by the battle commander could be cut.

Offensive and reconnaissance capabilities of Army aircraft, and a study of the use of surveillance drones. This includes studies of armament require-

Hughes YHO-2HU reconnaissance helicopter is presently undergoing service tests by Aviation Board. Powered by a Lycoming 0-360, the YH0-2HU can carry 200 lb. pilot and 250 lbs. payload a distance of 170 n.m. Cruise speed is 70 kts.

Sikorsky H-37A being tested by Army Aviation Board at Climatic Projects Laboratory, Eglin, AFB, Fla. to determine suitability of new winterization kit. Included in kit is a 600,000 BTU gasoline-fired heater for preheating engines and warming cabin. Temperatures in laboratory range as low as —65F.

ments of observation aircraft, and how drones might be better used to gain intelligence information.

Low-level navigation. Many types of new equipment are being investigated for low altitude and terminal guidance to replace presently used pilotage methods. This equipment includes radars, homers, marker beacons, and an absolute altimeter.

Transportation Aircraft Test and Support Activity (TATSA) has the job of logistically evaluating new aircraft for the Army. By submitting them to an accelerated test program, TATSA can predict the component wear and serviceability of each new item in the Army's inventory. Main objectives of TATSA are:

- To get a more realistic picture of the field requirements in spare parts and manpower.
- To increase time between overhauls.
- To work out any bugs found in a new type of aircraft before it reaches the field in sufficient numbers to require an extensive IRAN program.

When it receives a new airplane, TATSA puts 1,000 hrs. on it within a period of three to six months. 1,000 hr. tests on the H-21 and H-34 were completed in 82 days—an average flying time of over 12 hrs. per day.

Most recent airplane to undergo TATSA evaluation was the turbine-powered Bell HU-1A Iroquois, first helicopter designed specifically for the Army. The airplane was flown an average of 10 hrs. per day, with both veteran test pilots and young flying school graduates at the controls. After completion of the program, pilots and mechanics agreed, almost to the man, that the HU-1A was a good airplane, with only the average amount of trouble encountered.

In the early stages of the HU-1A test program, structural difficulties—believed caused by the high-powered tail rotor—were experienced in the tail boom. As a result of TATSA's recommendations, Bell has increased the skin thickness and added stringers to that section, which the Army says is a very satisfactory fix.

TATSA is still investigating some stability problems found in hovering.

Through its extensive tests, TATSA has been able to make several improvements in component life on the HU-1A. When the airplane left the factory, the recommended transmission life was 75 hrs., but TATSA has raised this figure to 300 hrs. Engine life has been increased to 150 hrs. from the initial 100 hr. level, and TATSA hopes to eventually reach 300 hrs.

Besides evaluating new aircraft, TATSA conducts flight tests on related equipment.

One of the most important test programs under way now is designed to give the Army a single type of fuel for a variety of aircraft. Flying two aircraft of the same type, TATSA is running them for 1,000 hrs. with one airplane burning the factory recommended grade fuel, and the other a test blend. The engines will then be inspected to see if the test fuel will be adequate for that and other types of aircraft.

Another TATSA project is the revision of the maintenance concept now used by the Army. Working on the theory that too much maintenance can do more harm than good, TATSA's system will eliminate many of the redundant operations now included in maintenance inspections.

Under the TATSA maintenance concept, a routine daily inspection will be conducted, with a periodic inspection made after each 10 hrs. of flying time, or every seven days, whichever comes first. If the aircraft is not flown at all, the inspection will be made after 15 days. Post flight inspection will also be cut down with no scheduled inspection repetitive. The entire series could be conducted at the same time without a section of the airplane being covered twice.

Maintenance work for TATSA is done by Test and Development Company, Division of Southern Airways, Inc., a civilian contracting agency. Test and Development Co. employs about 200 people at Ft. Rucker, and performs all maintenance on a progressive basis. After flights are completed each day, one section of the airplane is overhauled, with the following section done the next evening.

Army Aviation Board, under command of the amiable Col. John Marinelli, is responsible for the environmental tests of new aircraft and equipment. Primary mission of the Board includes:

- Examination of military requirements for technical feasibility.
- Evaluation of specifications set up for technical developments.
- Evaluation of equipment to determine its adaptability to requirements.
- Determining the needs for new Army-developed equipment.
- Monitoring of developments from mockup to service tests.
- Conducting service tests to form basis for type classification.
- Continuous use of standard equipment which has received unsatisfactory reports for the formation of engineering change proposals.

The service tests are the Board's most inclusive function. In these tests, the quality of the equipment is on trial. The tests are divided into three phases:

Phase I determines the flight characteristics and over-all performance of the equipment. Aircraft are flown 50 hrs. over a 10-day period to speed up the fault-finding process.

Phase II consists of 150 hrs. of flying over a 60-day period to determine how much in the way of new skills will be required by the pilot and mechanics.

Phase III determines the tactical suitability of the equipment. It involves another 150 hrs. of flying over a 60-day period.

The board has just completed tests on the HU-1A and is preparing for the

de Havilland DHC-4 Caribou. Largest airplane ever to enter the Army's inventory, the Caribou will undergo certification tests at Ft. Rucker just prior to the service tests.

In keeping with Combat Development Office's search for better navigational equipment, the Board is testing a variety of systems. A joint project with the Air Force is under way for evaluation of Doppler radar navigation aids. Until these long-range programs bear fruit, Board studies are being directed toward an interim system using GCA.

Signal Corps Aviation Test and Support Activity (SCATSA) is the electronics counterpart of TATSA. This group conducts accelerated tests on radio and navigational equipment to determine its reliability.

U.S. Army Board for Aviation Accident Research is responsible for analysis of all aircraft accidents, and the formulation of corrective action. It has the authority to order changes in aircraft design, revision of operating techniques, or any other action deemed necessary.

Human Resource Research Office was begun by George Washington University and is operated under Army contract. Its mission is to examine and determine the capabilities of Army aviation students from a psychological standpoint. This includes job analysis, proficiency measurements, and development of new training procedures.

AN/FPN-33 GCA radar recently standardized by Army for use at fixed base installations. Army is also studying proposals for portable terminal navigation aids for use at unprepared advanced fields.

*We present as "Hangar of the Month" the one pictured above, constructed for Delta Airlines, at Love Field, Dallas, Texas. This is a turn-around base for two DC-8 airplanes.

COMPLETELY UNOBSTRUCTED CLEAR SPAN for the *MOST EFFICIENT HANGAR UTILIZATION*

ERWIN-NEWMAN Suspended Cantilever Type construction eliminates the outmoded hangar problem of having to spot planes in a hangar full of obstructing supporting columns. From one end to the other there is nothing but wide open unobstructed clear span hangar work area when you construct a modern ERWIN-NEWMAN hangar.

ERWIN-NEWMAN hangars are built with an expandable future in mind. The length can be enlarged and still have clear span space up to several hundred of several thousand feet. Vertical clearance can be increased, in the future, by adding tail gates at any number of points across the front.

Our years of experience in design and construction make it imperative you consult with us when you plan a hangar of any size (no obligation of course).

Due to certain patent infringements it is necessary to publish this

IMPORTANT PATENT NOTICE

The Erwin-Newman Suspended Cantilever Hangars are covered by United States Patent No. 2,687,102, and similar foreign patents issued to us and under which we hold exclusive rights. We have not (at this writing) issued any licenses of other authorization for the design, engineering, construction, or use of these patented hangars. The Erwin-Newman Company must, and will, protect its rights under these patents against infringements.

Erwin Newman Co.

DESIGNERS AND CONSTRUCTORS
U. S. Patent No. 2,687,102

P. O. BOX 1308 HOUSTON, TEXAS

Circle No. 28 on Reader Service Card.

Delta's "Royal Scot"

DC-7B NON-STOP LUXURY DAYCOACHES SERVING DETROIT • MIAMI • CHICAGO • NEW YORK • HOUSTON

Delta "Royal Scots" offer unique luxuries—at coach fares! Delicious hot meals are *included in the fare* . . . beverage service is available . . . and there's plenty of room to stretch out in a comfortable airfoam contour seat, reserved, of course. In fact, if it wasn't for the fare, you wouldn't know it was a coach!

NEW YORK–HOUSTON $76.55

The ONLY non-stop daycoach service

Lv. 4:30 pm	NEW YORK	Ar. 2:20 pm
Ar. 9:12 pm ▼	HOUSTON ▲	Lv. 8:50 am

Connects at Idlewild to and from all overseas flights!

fares plus tax

MIAMI–DETROIT $61.80

The ONLY non-stop daycoach service

Lv. 4:10 pm	MIAMI	Ar. 2:07 pm
Ar. 8:33 pm ▼	DETROIT ▲	Lv. 10:00 am

CHICAGO–MIAMI $59.10

Non-stop luxury at a coach fare

Lv. 9:30 am 1:05 pm	CHICAGO	Ar. 12:00 pm 3:03 pm 9:03 pm
Ar. 2:29 pm 6:07 pm ▼	MIAMI ▲	Lv. 8:30 am 11:35 am 5:35 pm

Delta AIR LINES

General Offices: *Atlanta Airport, Atlanta, Georgia*

Circle No. 19 on Reader Service Card.

How to do business with the Army

Most contractual Army Aviation activities are actually carried on by the seven Army Technical Services. The chief of each technical service is responsible for items in his own area, whether research and development, or procurement, production, storage, maintenance and supply.

Overall supervision of logistic activities is exercised by the Deputy Chief of Staff for Logistics. The Chief of Research and Development has overall supervision of research and development activities.

The Director of Army Aviation in the Office of the Deputy Chief of Staff for Military Operations has coordinating responsibility of all aspects of Army Aviation. The Chief of Transportation is responsible for the conduct of research and development for Army aircraft and allied equipment.

Complete aircraft are normally developed with Army funds through the Air Force or Navy.

The prospective contractor should get in touch directly with the particular Technical Service listed below (or one of its field commands) addressed: Dept. of Army, Washington 25, D.C.

Technical Services Directory

- **Chemical Corps** — Chief Chemical Officer
- **Ordnance Corps** — Chief of Ordnance
- **Army Medical Service** — The Surgeon General
- **Quartermaster Corps** — The Quartermaster General
- **Corps of Engineers** — Chief of Engineers
- **Signal Corps** — Chief Signal Officer
- **Transportation Corps** — Chief of Transportation

There are four steps the prospective contractor should take:

1. Consider your proposal—The principal items and activities listed in this guide will illustrate the broad and specific fields of Army Aviation and help determine whether your proposal comes within the program.

2. Identify your proper contract—Under the listing of Army Service items and activities below are given the name of the Technical Service concerned and the name and address of the field command which awards contracts for procurement or research and development of the item or activity.

3. Prepare and forward your proposal—As far as feasible, include all the following information in your first letter:

a. Organization information.

(1) Name and type of company.

(2) Total number of employes; also totals of specialized personnel appropriate to your proposal.

(3) Facilities—brief description of facilities available.

(4) Clearance—if you have had "facility clearance" from the Army, Navy or Air Force, state which.

(5) Background—brief outline of work done previously in field of your proposal.

(6) Descriptive brochure and financial statement if available.

b. Clear and full discussion of proposed work in terms of objectives and scope.

Should you have no specific project to propose, but merely want to list your company as a candidate for future work that may develop in your field, this information, along with the organizational information outlined above, will be welcomed by the appropriate Technical Service.

4. Arrange to submit a bid or proposal for a contract—Contractors are selected on the basis of experience, adequacy of facilities, skill and availability of personnel, quality of workmanship, plant organization and other factors, as well as on price. Some Army contracts result from competitive negotiation rather than from advertising and bids.

There are seven broad categories of procurement, production and research and development in Army Aviation. These categories are:

1. Airframes
2. Engines
3. Instruments
4. Avionics
5. Accessories
6. Ground Handling and Terminal Equipment
7. Aircraft Research Studies and Investigations

NOTE: Contract offices are shown (1) for research and development and (2) for procurement, production, maintenance, supply and service. Latter is listed in each case as "production" to distinguish it from R&D.

Chemical Corps

Accessories

Dispensing equipment for smokes and aerosols.

Pilot CBR protective masks.

(For Research and Development)
Col. Lloyd E. Fellenz
Commanding Officer
Army Chemical Center Procurement Agency, Army Chemical Center, Edgewood, Md.
Phone: EDgewood 1000, Ext. 27120

(For Production)
Lt. Col. John G. Appel
Commanding Officer
Army Chemical Procurement District, New York
290 Broadway, New York 7, N.Y.
Phone: BArkley 7-0800

Ground handling equipment

Ground handling and servicing items for smoke and aerosol dispensing equipment.

(For Research and Development)
Col. Lloyd E. Fellenz
Commanding Officer
Army Chemical Center Procurement Agency
Army Chemical Center
Edgewood, Md.
Phone: EDgewood 1000, Ext. 27120

(For Production)
Lt. Col. John G. Appel
Commanding Officer
Army Chemical Procurement District, New York
290 Broadway
New York 7, N.Y.
Phone: BArkley 7-0800

Corps of Engineers

Accessories

Aerial mapping.
Aerial surveying.
Target acquisition.

(For Research and Development)
Mr. Donald L. Lilley
Purchasing and Contracting Officer
Army Engineer R&D Laboratories
Ft. Belvoir, Va.
Phone: SOuth 5-7700, Ext. 20240

(For Production)
Col. F. O. Diercks
Commanding Officer
Army Map Service
6500 Brooks Lane
Washington 25, D.C.
Phone: OLiver 4-4350

Ground handling and terminal equipment

Metal and plastic landing mats.
Mobile test laboratories for concrete, asphalt and soils.
Soil stabilizers.
Trafficability.

(For Research and Development)
Col. Andrew P. Rollins, Jr.
Director, Waterways Experiment Station
Vicksburg, Miss.
Phone: Vicksburg 3-3000

(For Production)
Col. Jay A. Abercrombie
Commanding Officer
Army Engineer Procurement Office
226 Jackson Blvd., Chicago 6, Ill.
Phone: ANdover 3-3600

Construction and maintenance equipment.
Electrical equipment.
Firefighting equipment.
Infra-red.
Liquid fuels distribution—pipes, pipelines and accessories, storage tanks.
Materials for construction and equipment.
Pneumatic tools.
Pumps.
Trailers, and semi-trailers.

Turbines, gas.
Water purification equipment.
(For Research and Development)
Mr. Donald L. Lilley
Procurement and Contracting Officer
Army Engineer R&D Laboratories
Ft. Belvoir, Va.
Phone: SOuth 5-7700, Ext. 20240
(For Production)
Col. Jay A. Abercrombie, Chief
Army Engineer Procurement Office
226 West Jackson Blvd.
Chicago 6, Ill.
Phone: ANdover 3-3600

Ordnance Corps

Accessories

Jatos, using extruded and cast double-base propellants.
(For Research and Development)
Col. C. F. Buck
Commanding Officer
Picatinny Arsenal
Dover, N.J.
Phone: FOxcroft 6-0711
(For Production)
Col. Charles K. Allen
Commanding Officer
Ordnance Ammunition Command
Joliet, Ill.
Phone: JOliet 7-1711
Jatos, except propellants.
(For Research and Development)
Brig. Gen. John G. Shinkle, Commander
Army Rocket and Guided Missile Agency, Redstone Arsenal, Ala.
Phone: Jefferson 6-4411

Ground handling and terminal equipment

(For R&D and Production)
Transport vehicles.
Maj. Gen. N. M. Lynde, Jr.
Commanding General
Ordnance Tank-Automotive Command
1501 Beard St.
Detroit, Mich.
Phone: VInewood 3-9600
Linking and delinking machines.
Target material.
(For R&D and Production)
Brig. Gen. William K. Ghormley
Commanding General
Ordnance Weapons Command
Rock Island Arsenal, Rock Island, Ill.
Phone: Rock Island 8-5651
Automatic aircraft weapons, all calibers.
Belt links and clips; up to and including 30mm.
Feed mechanisms.
Flash hiders.
Machine guns, up to and including 30mm.
Mounts for machine guns.
(For R&D and Production)
Col. O. E. Hurlbut
Commanding Officer
Springfield Armory
Springfield 1, Mass.
Phone: REpublic 9-6911

Quartermaster Corps

Accessories

Clothing.
Containers.
Equipage.
Footware.
Handware.
Materials handling equipment.
Mechanical equipment.
Petroleum handling equipment.
Rations.
Tentage.
Textiles.
(For Research and Development)
Maj. Gen. Charles G. Calloway
Commanding General
Quartermaster Research and Engineering Command, U.S. Army
Natick, Mass.
Phone: OLympic 3-1000
(For Production and Procurement—Textiles, Clothing, Footware, Handware, Tentage, Equipage)
Maj. Gen. Webster Anderson
Executive Director
Military Clothing and Textile Supply Agency
2800 S. 20th Street
Philadelphia 45, Pa.
Phone: HOward 5-2000
(For Production and Procurement—Rations)
Maj. Gen. Hugh Mackintosh
Executive Director
Military Subsistence Supply Agency
226 W. Jackson Blvd.
Chicago 6, Ill.
Phone: ANdover 3-3600
(For Production and Procurement—Parachutes and Aerial Delivery Equipment, General Supplies, Materials Handling Equipment, Fuel and Lubricant Dispensing and Handling Equipment, Mobile and Base Petroleum Laboratories)
Brig. Gen. H. A. Hall
Commanding General
Columbus General Depot, Army
Columbus 15, Ohio
Phone: BElmont 1-1811

Signal Corps

Instruments

Communications.
Electromagnetic spectrum.
Electronic countermeasures.
Light (propagation phenomena).
Radar.
Sound.
Thermionics.
Ultrasonics.
Electronic components.

Avionics

Automatic and remote control.
Autopilot systems.
Communications.
Drone control.
Navigation.
Identification.

Accessories

Combat surveillance sensors (photo, infra-red, radar, television).
Electronic countermeasures.
Radar.
Radio communication.
Radio direction finding.
Television.

Ground handling and terminal equipment

Meteorological instrumentation.
Radar.
Radio direction finding.
Radio and wire communication.
Television.
Traffic control.
(For Research and Development)
Col. Robert F. Wilson
Commanding Officer
Laboratory Procurement Office
Army Signal Supply Agency
Fort Monmouth, N.J.
Phone: LIberty 2-4000, Ext. 51115
(For Production)
Col. E. L. Littell
Commanding Officer
Army Signal Supply Agency
225 South 18th St.
Philadelphia 3, Pa.
Phone: KIngsley 6-3200, Ext. 8000

Army Medical Service

Accessories

First aid kits.
Litters.
(For Research and Development)
Army Medical Service
R&D Committee
Office of the Surgeon General
Munitions Building
Washington 25, D.C.
(For Production)
Executive Director
Military Medical Supply Agency
84 Sands Street
Brooklyn 1, N.Y.

Transportation Corps

Airframes

Airframes and configurations.
Structural materials of all kinds for aircraft.

Engines

Aircraft powerplants.

Instruments

Aircraft components.

Accessories

Aircraft accessory equipment and systems.

Aircraft research, studies and investigations

VTOL/STOL aircraft.
Slow speed aerodynamics.
Helicopters.
Operational research in aviation systems.
(For Research and Development)
Asst. Chief of Transportation for R&D
Building T-7, Washington 25, D.C.
Phone: LIberty 5-6700, Ext. 55480
(For Production)
Col. H. L. Phyfe
Director of Procurement and Production
Army Transportation Supply & Maintenance Command
12th and Spruce Sts.
St. Louis 2, Mo.
Phone: MAin 1-6426, Ext. 603 or 604

Miscellaneous Notes

Contractors who are uncertain as to where to place a specific inquiry should write one of the following offices:

On matters of purchasing or procurement of standard products or components

Procurement Information Center
Office of the Deputy Chief of Staff for Logistics
Department of the Army
Old Post Office Building
12th and Pennsylvania Ave.
Washington 25, D.C.
Phone: LIberty 5-6700, Ext. 63231

On matters of supply, maintenance and service

Director Procurement & Production
Army Transportation Supply and Maintenance Command
12th and Spruce Streets
St. Louis 2, Mo.

On matters of research and development

Technical Liaison Office
Office of Chief, R&D
Department of the Army
Washington 25, D.C.

JETLINERS

DEMAND JET-AGE BRAKES

From touch-down
to the end of the landing run,
the superb new jet airliners
are under the smooth and certain control
of Bendix Brakes.

. . . It was entirely logical
to look to the world's most experienced supplier,
to get brakes that were up to the exacting standards
of these swept-wing giants.

. . . For similar reasons
Bendix Brakes are regular equipment
on the largest military jet aircraft,
as well as fully certified by CAA for the new civilian jets.

. . . Brakes-by-Bendix is another reason why
you can fly the jetliners with complete assurance.

BENDIX PRODUCTS DIVISION SOUTH BEND, IND.

Bendix
AVIATION CORPORATION

stay at the

Hotel Lexington

On smart East Side, blocks from famous clubs, 5th Av. shops, Grand Central, theatres. All outside rooms, with shower, tub, radio.

Special Family Plan—no charge for children under 14 sharing room with parents.

home of the famous

HAWAIIAN ROOM

LEXINGTON AVE. at 48th ST.
NEW YORK 17, N. Y. PLAZA 5-4400
See your local travel agency or write to Promotion Dept. for Brochure 390

BOSTON Hancock 6-6625 | MIAMI Franklin 9-8331 | CHICAGO Dearborn 2-4432

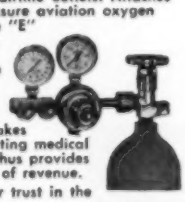
Circle No. 32 on Reader Service Card.

PIONEER MANUFACTURER OF AVIATION OXYGEN BREATHING EQUIPMENT

NOW!
LOW-COST
MEDICAL
OXYGEN
SERVICE

WITH PURITAN MEDICAL REGULATOR PASSENGER BREATHING UNIT

Unit consists of a single-stage, constant flow regulator; cylinder pressure gauge; outlet flow gauge (calibrated in litres) and 2 standard airline outlets. Attaches to any high pressure aviation oxygen source or Puritan "E" medical cylinder. Puritan lightweight aluminum cylinder stand available at low-cost.



This unit now makes possible transporting medical passengers and thus provides an added source of revenue.

You can put your trust in the name Puritan.

Aviation Division

PURITAN MAID

Puritan

SINCE 1913

COMPRESSED GAS CORPORATION
2010 GRAND AVE. KANSAS CITY 8, MO.

Circle No. 33 on Reader Service Card.

INTERNATIONAL REPORT

By Anthony Vandyk

Facilitation is an important item on the agenda of the European Civil Aviation Conference which opens in Strasbourg, France, this week. It is to be hoped that one result of this inter-governmental meeting will be the elimination of the embarkation/debarkation card which is still inflicted on air travelers by certain European nations. The French, inexplicably, insist that passengers traveling by air to and from France fill in an embarkation/debarkation card. This formality is exclusively for air passengers—people entering or leaving France by road, rail or sea do not have to fill in any card.

• **GE's T58 impresses Europe**—It looks as though the General Electric T58 will be as successful in Europe as certain European turbine engines have been in the United States. The T58 is the first American aircraft gas turbine engine to be built under license in Europe—de Havilland is producing it under the name Gnome. It's a good bet that the T58 will be used in a development of the Scottish Aviation twin pioneer STOL transport and in a developed version of Sud Aviation's 3200 three-engine transport helicopter. Italy's Agusta 101, a design similar to the 3200, is also likely to have the T58 as its powerplant.

•**Conferences make big hits**—Engineering conferences by U.S. manufacturers are becoming the fashion in Europe. Collins Radio Co. had a highly successful conference complete with exhibits in Geneva a few months ago at which all the latest Collins aviation products were shown. The particular accent was on Doppler. More recently, Bendix Aviation Corp. staged three engineering conferences in Europe—two in Germany and another in Paris.

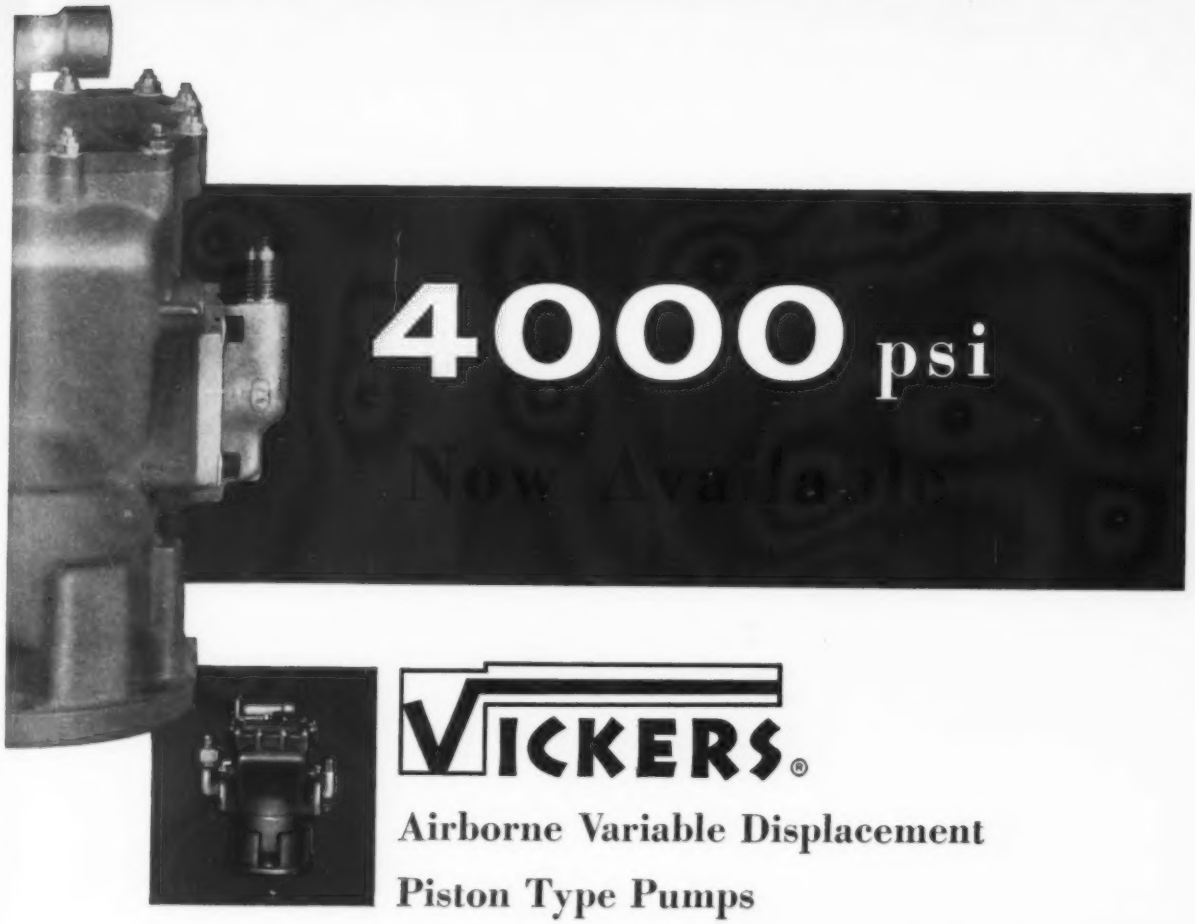
More than six tons of equipment and material were brought from the United States for exhibition. The three-day meeting in Paris was attended by several hundred European aviation engineers and officials. During the symposium on missiles about 800 people were present. On hand from Bendix were 21 top research and design engineers and three vice presidents. No effort or cost was spared to make the conference a success.

Simultaneous interpretation into French and availability of French translations of all papers read made the conference particularly easy to follow for the French participants. Similar arrangements were made for German interpretation and translations when the conferences were staged in Germany. It is too early to determine whether conferences such as those staged by Collins and Bendix pay off in sales—preliminary indications are that they will—but it is certain that they succeeded in creating a lot of good will for the organizers.

•**For better service plus profit**—The signing of a "commercial agreement" between Air France and British European Airways for the London-Paris and London-Nice routes means that all major intra-European routes will be pooled effective this spring. The agreement between the British and French carriers was signed on February 10, the date of the 40th anniversary of the start of scheduled air services between London and Paris.

Although this is the best known route in Europe and it is used by about a million passengers each year, up to now it has been a money-losing operation for both Air France and BEA. However, under the new arrangement it is hoped to rationalize the operation to provide better service for passengers and at the same time make a profit for the operators. A target of a 75% average load factor has been set by the two airlines.

Flights will be scheduled on an integrated rather than on a competitive basis and tickets will be valid on both airlines without endorsements, a novelty for Europe. Another highly significant feature of the Air France-BEA agreement involves the establishment of an economy class operation between London and Paris next year at fares 15% to 20% below the tourist rate. Air France will probably operate 102-seat Super Constellations while BEA will use 60-seat Viscount 700s.



VICKERS®

Airborne Variable Displacement Piston Type Pumps

A NEW LINE of Vickers Variable Displacement Piston Type Pumps is now available for aircraft applications at *4000 psi pressure.* These new pumps have the same exceptionally high overall efficiency as well as the many other performance advantages demonstrated by the 3000 psi Vickers pump series throughout millions of hours of dependable airborne service. Flow characteristics and maximum recommended speeds are also the same for both series.

An important feature of the 4000 psi series is a CONTAMINANT-TOLERANT DESIGN enabling successful operations in hydraulic fluids and engine lubricating oils with particle sizes up to 40 microns.

Operation of airborne hydraulic systems at 4000 psi is finding increasing favor because it means smaller actuators and less fluid in the system . . . resulting in an overall weight and space advantage.

Vickers 4000 psi hydraulic motors and fixed displacement pumps will also be available. For further information about 4000 psi pumps and motors, please write for Bulletin A-5219 or get in touch with the nearest Aero Hydraulics Division office listed below.

7880

VICKERS INCORPORATED

DIVISION OF SPERRY RAND CORPORATION

Aero Hydraulics Division • Engineering, Sales and Service Offices:

ADMINISTRATIVE and ENGINEERING CENTER
Department 1502 • Detroit 32, Michigan

TORRANCE, CALIFORNIA • 3201 Lomita Boulevard
P.O. Box 2003 • Torrance, California

Aero Hydraulics Division District Sales and Service Offices • Albertson, Long Island, N. Y., 882 Willis Ave.
Arlington, Texas, P.O. Box 213 • Seattle 4, Washington, 623 8th Ave. South • Washington 5, D.C., 624-7 Wyatt Bldg.
Additional Service facilities at: Miami Springs, Fla., 641 De Soto Drive
TELEGRAMS: Vickers WUX Detroit, TELETYPE: "ROY" 1149—CABLE: Videt
OVERSEAS REPRESENTATIVE: The Sperry Gyroscope Co., Ltd.—Great West Road, Brentford, Middx., England

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Circle No. 21 on Reader Service Card.

by Sinclair. There is no better proof of reliability.

SINCLAIR

Aircraft Oils

SINCLAIR REFINING COMPANY, Aviation Sales
600 Fifth Ave., New York 20, N. Y.

Circle No. 22 on Reader Service Card.

Eisenhower Request Stirs CAB

Consolidation of Pacific Route Filings May Bring Spurt of New Bids Unless CAB Restricts Scope

One of the biggest CAB cases in years may result from President Eisenhower's request that the Board consolidate all Pacific air route matters into a single record.

Unless CAB places restrictions on the scope of the case, a number of new applications are expected to be filed for Pacific routes and a major expansion for Pan American World Airways—flights from eastern and midwestern U.S. cities to the Orient—may be considered. One airline attorney speculated that the proceeding could dwarf even the upcoming southern transcontinental route case.

President Eisenhower pointed out that "this Administration is firmly committed to the view that the public interest requires competitive American flag service at the earliest feasible date on all international air routes serving major U.S. gateways . . . Over the North Atlantic our objective has been substantially achieved, but in the Pacific, because so far it has not been deemed feasible, very little progress . . . has been made."

CAB statistics show, he said, that total U.S. revenue traffic in the Pacific "is continuing to grow" despite a slight decline last year in passenger traffic carried by PAA and Northwest. "This latter situation will undoubtedly be improved, however, by the recent determination (in talks with the Japanese) that American flag carriers may schedule additional flights between U.S. gateways and Tokyo."

Reviewing the present Pacific route situation and calling for a new proceeding, the President said NWA's authority to serve Okinawa, Formosa, Hong Kong and the Philippines from Seattle-Portland and Pan American's authority to serve Tokyo via Honolulu expire in 1960. "Other authorizations have expired or are about to expire.

"And a number of applications are pending—for example, Northwest's application to serve San Francisco and Los Angeles and Pan American's application to serve New York, Baltimore-Washington, Detroit, Chicago, Seattle and Portland."

CAB sent to the White House statistics showing that in the survey months of March and September, 1958, NWA and PAA carried 2,531 tons of Pacific revenue traffic (passengers, mail and cargo, irrespective of origin or destination), against 2,385 tons in the same 1957 months. NWA's share of the business increased from 37.8% in 1957 to 39.7% last year; PAA's dropped from 62.2% to 60.3%.

Passengers carried by the two lines decreased from 13,771 in the 1957 survey months to 13,146 in 1958. NWA's share rose from 28.5% to 30.1%; PAA's fell from 71.5% to 69.9%.

Next move will be for CAB to issue a formal order setting up an investigation and outlining the scope of the issues to be considered.

FAA Negotiates Contracts Covering Navigation Aids

Contracts covering development of an all-weather landing system and evaluation of air traffic control procedures have been awarded by Federal Aviation Agency.

FAA also announced establishment of a new dual airway between Washington and Richmond that will permit more efficient handling of traffic from Washington to the south.

Gilfillan Brothers, Inc., Los Angeles, received a $381,446 contract for an experimental electronic system to provide a human pilot or flight control system with more suitable information on elevation position during approach, landing and rollout operations. Called REGAL (Range and Elevation Guidance for Approach and Landing), the system regarded as a step toward ultimate development of all-weather landing, will be tested at FAA's National Aviation Facilities Experimental Center, Atlantic City, N.J.

A $721,000 contract for a MOPTAR (Multi-Object Phase Tracking and Ranging) system went to Cubic Corp., San Diego. Because of its extreme accuracy, rated at plus or minus 5 ft. up to 200 miles distance, the system was selected for experimentation and evaluation of air traffic control procedures, equipment, and systems.

New Washington-Richmond airway —effective Apr. 9—was made possible by voluntary reduction in size and joint use of a restricted area overlying the U.S. Navy Proving Ground at Dahlgren, Va., and joint use of a similar restricted area over the Army's Camp A.P. Hill, Va., FAA said. Usable altitudes will normally be at 8,000 ft. and above when restricted areas are in military use, although at infrequent intervals they may be closed to normal traffic because of high-altitude military activities at Camp A.P. Hill.

Delta Will Carry Mail Case to Supreme Court

CAB wants to collect $1,795,000 from Delta Air Lines in an old mail rate case, but the carrier says it will appeal to the Supreme Court if necessary.

The Board claims it paid Chicago & Southern Air Lines (merged with Delta in 1953) $1,795,000 excess mail compensation for international operations from Nov. 1, 1946 through July 31, 1952.

In 1954, a court returned a Delta-C&S rate case to CAB, stating that the Board must offset a carrier's excess domestic earnings against its international division mail pay requirements.

Delta claims that the court remand was limited to this offset issue and that CAB has no power to reopen the case to review past international mail pay.

HAL to Convert Convairs To Compete With Aloha

To prepare for competition with Fairchild F-27s which Aloha Airlines expects to operate, Hawaiian Airlines won CAB approval of a guaranteed loan covering conversion of four Convair 340s to turboprop power.

HAL has not yet decided whether to install Napier Eland powerplants (Convair 540) or Allisons (Convair 640). The project will be completed by June 30, 1960 at cost of $3,650,000, including spare parts. Estimate per aircraft is $500,000 for engine conversion, $100,000 for interior modification.

HAL president Arthur D. Lewis said studies show the airline's share of the market would drop from 70% to 50% if it were forced to compete against the F-27 with present equipment. Aloha asked CAB in December to guarantee a $2,290,000 loan to buy three F-27s which will cost $2,544,977.

Earl Johnson Takes Government To Task for Short-Sightedness

The aircraft manufacturers' two customers for fast, efficient cargo planes —the airlines and the military—don't have the money to modernize their fleets, and the principal reason is short-sighted government policy, according to Earl D. Johnson, executive vice president of General Dynamics Corp.

In a blunt speech at the Wings Club in New York, in which he singled out CAB for major criticism, Johnson described the customers' predicament as follows:

Airlines: "It verges on the ridiculous that here in the spring of 1959, with at least three of the 12 scheduled airlines . . . in severe credit difficulties and with three of the remaining nine in a financial bind, after months and months the general fare investigation (by CAB) still seems but little closer to a conclusion . . . It has been a patent fact that the airlines need fare relief." CAB "is crippling the very industry it was designed to aid."

Military: ". . . The mounting requirements of defense due to astronomical costs of the highly sophisticated and complex, exotic weapons systems virtually precludes the government from pioneering new transport-type aircraft. The requirements for airlift for logistical purposes, while extremely important, apparently are not of sufficiently high priority to produce the funds required to buy new-type transports for the military."

Asserting that the "real bread and butter" of a transportation system is in the "mundane, every-day two-way transportation of goods," Johnson said the manufacturer is in a position to serve its customers with better cargo aircraft (General Dynamics' Canadair subsidiary is working on a swing-tail version of the CL-44D turboprop, Convair on a similar model of the 600 jet transport).

However, the customers "may turn out to be like China, which needs virtually everything that this great industrial complex of our age can supply, but lacks the purchasing power to satisfy those needs," he added.

—Quesada Passes First Test—

The Senate Commerce Committee gave approval to the nomination of E. R. (Pete) Quesada for the post of Administrator of the Federal Aviation Agency and also sanctioned the nomination of former CAA Administrator James T. Pyle for Deputy Administrator. Early approval by the Senate was anticipated.

Quesada appeared before the Commerce Committee and was questioned for nearly two hours before receiving official endorsement. The questioning, which was on a cordial basis, was conducted principally by Sen. Warren Magnuson (D-Wash.) and Sen. A. S. Mike Monroney (D-Okla.).

Oren Harris Writes Bill Aimed at Curbing Bribes

Under terms of a proposed bill (H.R. 4800), anyone convicted of making illegal approaches concerning cases before the CAB and five other regulatory agencies would be subject to $10,000 fine and one year in prison. The bill was proposed by Rep. Oren Harris (D-Ark.), chairman of the House Commerce Committee, who has been granted $200,000 to form a new subcommittee on legislative influence.

The Harris bill provides for overall standards of conduct for members and staffs of the six federal regulatory agencies. It would require all communications concerning cases before the commission, both written and oral, to be made a part of public record.

Written communications would pass directly into public record, and any person appearing before a member of the commission, on his own or his client's behalf, would have to file written notice of such appearance. Written summaries would be required of all oral and telephone conversations.

Policing of the bill would be the responsibility of the Justice Department.

To determine the responsibility of members handling cases, the bill, if passed, would require CAB and the other agencies to assign personal supervision in each case. No member of the Board will be responsible for a "substantially greater" number of statements than any other member.

Senate has also established a special subcommittee, formed from the Senate Judiciary Subcommittee, to investigate the regulatory agencies. It has been granted a budget of $115,000 to conduct a one-year probe.

SAS and KLM Are Raising Funds Here for New Jets

Two European airlines are raising money in the U.S. to help finance purchase of jet equipment.

Scandinavian Airlines System negotiated a $49 million loan with American banks and insurance companies. Of the total, $33 million is coming from a group of banks headed by First National City Bank of New York, and $16 million from two insurance companies. SAS said the loan agreement involves, first, conversion of an earlier dollar loan, and second, granting of a new loan.

KLM Royal Dutch Airlines filed a statement with SEC seeking registration of $17 million of convertible subordinated debentures, due in 1979, and will use the proceeds to help pay for $40 million worth of new jet aircraft it intends to order.

The company is understood to favor a Pratt & Whitney turbofan version of the Douglas DC-8.

KLM at present has on order eight DC-8s for 1960 delivery and 12 Lockheed Electras for 1959-60 delivery. These were financed in part through bank credits and sale of common stock.

Airlines Attack Proposal Allowing Extra Sections

A proposal by a supplemental carrier, limited to 10 flights a month between any two points, to operate "extra sections" has brought strong protests from nine trunklines.

United States Overseas Airlines claimed its plan wouldn't violate CAB's 10-trip limit as long as it didn't hold out to the public that it operated over 10 flights and didn't advertise the extra sections.

Objections were immediately filed with CAB by TWA, Western, Capital, Delta, United, Pan American, Northwest and Eastern. Typical of the comments was Western's: "It is quite clear '10 flights' means '10 flights' and not an unlimited number of flights on each of 10 days during the month."

—INDUSTRY BRIEFS—

• **Lockheed Aircraft Service Inc.** delivered a Boeing 707 fueling system trainer panel to American Airlines. The panel, which simulates fueling at the left outboard wing gauging control section, is designed to teach maintenance and ground personnel the fueling and defueling systems of jet transports.

• **Pratt & Whitney's JT-12** jet engine has been selected to power the North American T-39 Sabreliner, twin-jet utility trainer ordered by USAF. The engine, also picked for the Lockheed JetStar and McDonnell 119, provides about seven pounds thrust for each pound of weight.

• **Airwork Corporation's** six branches have become distributors for Holley Carburetor Corp. Among components stocked will be fuel control, compressor bleed governor and bleed piston actuator for the J75 jet engine, and speed limiter and compressor bleed governor for the J57. Airwork branches are at Jamaica, L.I., Newark, Cleveland, Atlanta, Miami and Washington, D.C.

• **Pacific Airmotive Corp.** opened a sales branch at Honolulu International Airport, with R. H. Benelisha as manager.

• **Garrett Corporation's AiResearch Mfg. Division,** Los Angeles, said that more than 100 of its ground power vehicles have been ordered by five airlines for use with Boeing 707s or Lockheed Electras. Customers are Eastern, Braniff, National, TWA and Qantas. AiResearch also announced it is providing jet fuel and electrical starting power for Bristol Britannias being flown into Los Angeles International Airport by Cia. Mexicana de Aviacion on its route from Mexico City.

• **Burns Aero Seat Co.,** Burbank, Calif., received a contract for production of the forward lounge section of Eastern Air Lines' DC-8s.

• **Collins Radio Co.,** Cedar Rapids, Ia., received a $400,000 order for ground-to-air high frequency radio transmitters and receivers from the Indonesian Department of Civil Aviation.

• **Airtherm Corporation** has built a new type passenger seat for Lockheed's Electra. First planes with new weight-saving seats will go to National Airlines.

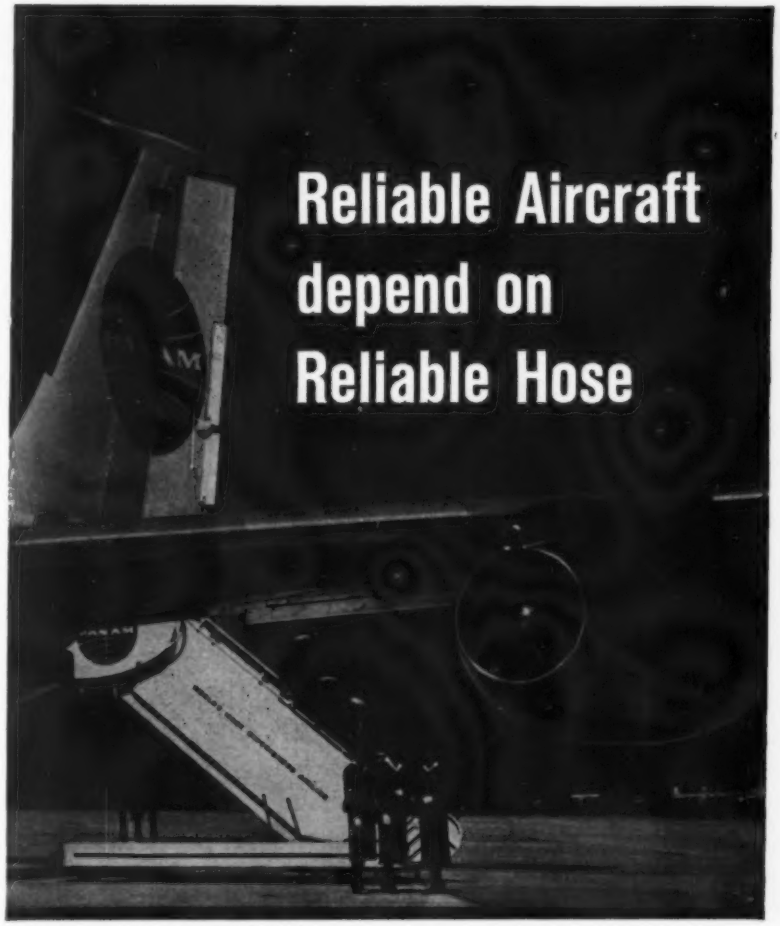


Photo courtesy Pan American World Airways.

MODERN military jets have proven Fluoroflex®-T (Teflon®) hose in rugged service. Now the fast new commercial airliners use this same hose—for safety *and* economy.

Fluoroflex-T hose, with patented, specially compounded tube of Teflon, is non-aging—has no shelf or service life limit. Originated by Resistoflex, Fluoroflex-T was the first Teflon hose and it has been flying for five years on all types of jet and reciprocating engines and aircraft. It is available with compression-type fittings or "Seal-Lock*" reusable fittings.

Always specify the hose with highest performance and capabilities—not only for safety's sake, but for savings as well. Send for details. Write Department 229, RESISTOFLEX CORPORATION, Roseland, New Jersey. Other Plants: Burbank, Calif.; Dallas, Tex.

**T.M., Pat. No. 2,853,319*

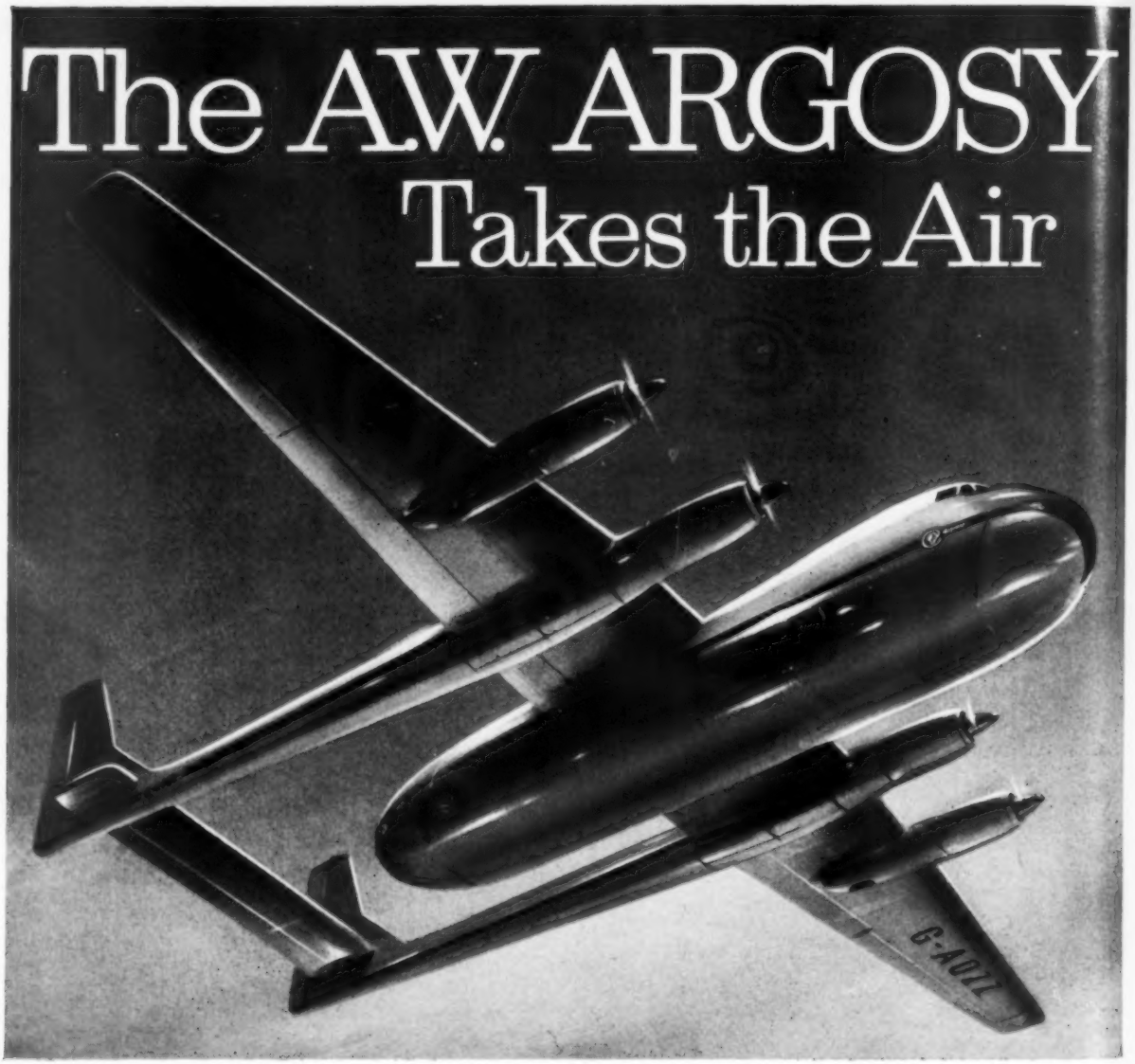
®Fluoroflex is a Resistoflex trademark, reg., U.S. pat. off.
®Teflon is DuPont's trademark for TFE fluorocarbon resins.

Originators of high temperature fluorocarbon hose assemblies

Resistoflex

Circle No. 26 on Reader Service Card.

The A.W. ARGOSY Takes the Air



HAWKER SIDDELEY BREAKS PRODUCTION RECORDS WITH NEW AIR FREIGHTERCOACH, FROM "GO AHEAD" TO FIRST FLIGHT IN 28 MONTHS

The Armstrong Whitworth Argosy is the world's first pressurised turboprop freighter-coach. Never before in Britain has such a large and complex aircraft made its first flight so soon after the decision to go ahead —only 28 months. This is further proof of Hawker Siddeley's unrivalled reputation in the British aircraft industry, not only for high quality craftsmanship, but ability to meet and beat production schedules. The Argosy ushers in a new era of "flying without frills". It offers 300 m.p.h. economical air transport for freight and coach-class passengers. With its capacity for 13½ short tons, full-width doors and quick-loading system, it reduces turn-around time and freight rates to a minimum. The Argosy can be in service on the world's air routes by 1960.

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LTD.

Baginton, Coventry, England / Member of Hawker Siddeley Aviation Division

THE ***Argosy*** ... BRINGS THE COST OF AIR FREIGHT DOWN TO EARTH

Circle No. 23 on Reader Service Card.

Chaos May Result From IATA Meeting

• Wild Rate War Is Considered Conceivable
• Trouble Results from Failure to Agree
• Seaboard & Western Takes Unusual Step

By Robert Burkhardt
Transport Editor

A rate war, similar to that now raging in South America, is threatening to break out among all the international airlines starting April 1, AMERICAN AVIATION has learned. Both passenger fares and cargo rates could be affected, with travel agents offering cut-rate ticket prices and cargo agents bidding for shipments with ever-mounting discounts.

This rate anarchy—if it comes to pass—will be the result of failure of the international carriers to fully agree at the Paris meeting of the International Air Transport Association (IATA) last month. Agreement was reached on some questions, notably the surcharge for jets. Failure to agree on a jet differential for cargo, like that approved for passengers, resulted in one carrier withholding approval of the all-important IATA agency resolutions.

Seaboard & Western, who took this unprecedented step, was "playing a desperate game" at Paris, according to one airline official who participated. Seaboard is in effect using the IATA "unanimity rule" in an effort to obtain lower differential cargo rates.

By withholding approval of the agency resolutions, Seaboard has technically freed all IATA airlines from their obligation to act in concert on two basic agency matters: designation of agents, and commissions paid. Carriers may continue after April 1 to follow the IATA policy on both these points, but the effect of Seaboard's action is to make it impossible for IATA to enforce its agreements with fines and threat of expulsion.

In addition, since Seaboard is a passenger as well as cargo carrier insofar as IATA membership is concerned, the Paris action affects both passenger and cargo agents. Actually, Seaboard carries no passengers directly, except by charters.

The passenger differential agreed to by the 87 carriers present at Paris was a surcharge. The cargo differential, turned down, would have lowered cargo tariffs on freighter aircraft.

No mention of Seaboard's action was made in the official IATA press release on the Paris conference. IATA's statement is confined to the various agreements that were reached. These include the decision that economy and tourist passengers on jets will pay an extra $15 each-way, while de luxe and first-class customers will be charged $20. Governments must approve the new fares, which cover what IATA calls "essentially a transitional period" from Apr. 1, 1959 to Mar. 30, 1960.

Also adopted were: (1) $5 increases in all classes of North Atlantic fares, as agreed to at last October's traffic conference in Cannes, (2) sliding scale jet surcharge on North and South American routes, (3) increase from $50 to $60 in the extra charge for de luxe service on the Atlantic, (4) standardization of Atlantic jet seating configuration, and (5) increase in U.S.-Europe cargo rates and establishment of special low promotional tariffs.

Leading proponent of a jet surcharge had been Alitalia, which had urged an extra fare in the 15% to 30% range. It was supported by other carriers who will not be operating jets immediately and who fear that the new planes will drain traffic from their piston-engined fleets. Pan American World Airways led the opposition, and the Cannes meeting last fall recessed with no agreement. The final outcome at Paris was a surcharge of about 4.5% first-class, 5.8% economy, based on the new fares.

Under the new agreement, New York-London first-class one-way fare rises from $435 to $440, tourist from $315 to $320, economy from $252 to $257. A de luxe passenger on a jet will pay $440 plus $60 extra fare plus $20 jet surcharge, or $520. First-class jet will be $460, tourist $335, economy $272.

Atlantic jets will have four-abreast seating for de luxe passengers, five-abreast for standard first-class.

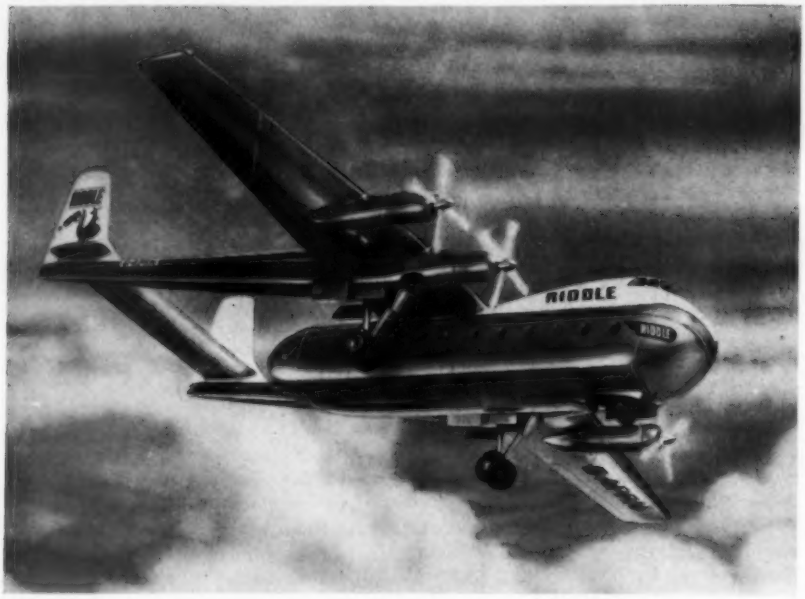
On North and South American routes, a sliding scale jet surcharge was approved for first-class and tourist. This will range up to $20 one-way New York-Buenos Aires. Fares on jets operated in the Far East and Pacific will not be surcharged for the time being.

A 5% across-the-board increase in Atlantic cargo rates was voted, and a "progressive policy of developing cargo to the greatest extent possible" was adopted. Promotional rates, cut as much as one-third below the present tariffs, will apply to a selected list of commodities, including automobiles, agricultural machinery, chemicals and business machines.

All fares, tariffs and surcharges are scheduled to come up for consideration again at the next IATA conference, to be held in Honolulu in September. But, if Seaboard's action is allowed to stand, the carriers will have to take some immediate action to protect themselves against the threatened rate war.

With higher commissions possible after April 1—and the agents have been agitating for several years for a larger share of the traffic dollar—it will be a stout-hearted travel agent who does not pass along some of his discount in an effort to build business. And when one agent yields, the others will be forced to give discounts to meet competition.

To avoid this rate anarchy, the international carriers may be forced to eject Seaboard from IATA. According to one authoritative IATA source, the possibility of this is likely to bring Seaboard into line before the April 1 deadline. If not, the resulting rate war could be the ruin of some carriers and result in a drastic change in IATA procedures.



Riddle to Get Turboprop Argosys On a 'Buy-if-you-like-it' Basis

A provisional order for four Armstrong Whitworth turboprop Argosy airfreighters has been placed by Riddle Airlines, and the company states it will be the first in the U.S. to put a "true cargo airplane" into service.

The four-plane deal, with spares, will total about $6 million, delivered in Miami. Sir W. G. Armstrong Whitworth Aircraft Ltd., the British manufacturer, reportedly will require no cash payment on the contract until the plane has proved itself to the carrier. Riddle's interest in the Argosy was first reported in AMERICAN AVIATION on Feb. 9.

The cargo line will be the first commercial operator of the Argosy. After making its first public appearance at the Paris International Air Show in June, the plane will probably be delivered to Riddle for demonstration flights under actual operating conditions.

The Argosy, designed specifically for cargo operation over short to medium range routes, is powered by four Rolls-Royce Darts. Cruising speed is 300 mph at altitudes up to 25,000 ft., and loads up to 13½ tons can be carried. Full-width freight doors are located at both ends of the aircraft.

Studies indicate that the Argosy's operating costs will be about 30% less than those of the C-46, Riddle's principal aircraft. And the airline figures that, because of speed, payload and quick turnaround capabilities, one Argosy will replace three C-46s.

On routes from Miami to New York, Chicago or Detroit, for example, C-46s fly north one night, returning the following night, requiring two planes to operate the service in each direction. The Argosy will make the roundtrip in one night, carrying twice the payload.

Said Riddle President George L. Giles: "With minimum reorganization, the Argosy's quick loading and turnaround will save us at least 20% on handling alone."

Royal Air Force Transport Command has placed an initial order for 25 military versions of the freighter.

United Wants the Facts On Actual Cost of Jets

The question of actual versus estimated jet operating costs already has been raised in a CAB case.

United Air Lines asked CAB to reopen the record in the New York-San Francisco nonstop case to permit further evidence, claiming there "is absolutely no question" that American Airlines' jet costs are "materially higher" than it forecast at hearings. Traffic estimates on the route also should be updated, UAL said. AA and Northwest applied for nonstop rights to compete with UAL and TWA.

UAL said CAB wanted a full investigation of the potential of jets and can get up-to-date data by reopening the case. It cited AA's increased pilot and stewardess personnel on jets as an example of higher costs. AA and NWA forecast a yearly traffic growth on the route, whereas last year showed a decrease, UAL added.

Carbon Monoxide Could be Clue in Explaining Crash

The cause of Pan American World Airways' Stratocruiser crash in the Pacific on Nov. 9, 1957 is still undetermined, and further research is in progress concerning the significance of evidence of carbon monoxide in body tissue of the plane's occupants, CAB's Bureau of Safety said.

In connection with the accident, a conclusion has almost been established that "carbon monoxide is not a by-product of advanced stages of post-mortem decomposition," but evidence in another accident has cast some doubt on the near-conclusion, CAB said, adding: "This question may take some time to resolve."

Tests indicated "elevated levels of carbon monoxide in several of the recovered bodies" but "it was impossible to relate the elevation of the carbon monoxide found in the bodies with the seating arrangement and, consequently, with the source . . ."

CAB found three "most likely" sources: a smoulderin; fire or thermal decomposition of some substance; second and "more probable," an "unusual occurrence in a power package," such as a propeller blade entering the fuselage and causing a fire; third, "which also fits most of the known circumstances, is the malicious introduction of pure CO into the cabin and preferably the flight deck . . ."

Guest Gets New Directors; SAS Will Give Assistance

Corporate and operational reorganization is under way at Guest Aerovias Mexico, which now plans to resume Mexico-Europe flights with aircraft and technical assistance from Scandinavian Airlines System.

Newly elected to the Guest board are Mexican Bankers Colon Eloy Vallina and Carlos Trouyet; Gunnar Beckman, of Telefonos de Mexico, and Rafael Mancera and Edurado Suarez. Still on the board are president Winston Guest, executive vice president George L. Monteiro, Julio Estrada and Juan Jose Bremer Barrera.

Flights from Mexico City via Miami and Lisbon to Madrid and Paris will start Mar. 20 with DC-6s obtained from SAS.

GALCO deal approved

American to sell DC-7s and lease GE jets

CAB has approved sale of 25 DC-7s by American Airlines to General Aircraft and Leasing Co., and granted AA's request to lease 150 General Electric aft-fan turbojet engines from JELCO Corp., wholly-owned GE subsidiary.

Price of the aircraft is $915,000 each. Engines, for use in the 25 Convair 600 jets ordered by AA, will be leased at $196,500 each.

Total engine rental of $27,510,000 is payable in 28 quarterly installments with interest not to exceed 4.56% on the unpaid balance. AA has option to buy any or all of the engines on any quarterly rental date for a price equal to the unpaid balance on the total base rental for the engines being purchased, or 10% of the total base rental for such engines, whichever is greater.

In the $22,875,000 DC-7 deal, GALCO has authorized issuance of 11 irrevocable, noninterest-bearing notes. General Dynamics Corp. has agreed that, if the notes which are to be used by AA as progress payments on its Convair 600s have not been paid when due, it will defer peyments due from AA in the same amount and for the same period.

CAB's approval order said GALCO anticipates that after it becomes fully operational "it will not be necessary to call on this commitment by Dynamics." GD, it stated, had advanced $1,895,000 to GALCO in addition to the credit commitment.

GALCO financing has not been completely arranged, and negotiations are currently under way in New York with various financing interests who desire to participate, CAB said, adding that all presently issued and outstanding GALCO stock consists only of qualifying shares and is registered in the name of A. R. Lunde. Officers and directors are Milton W. Arnold, president; Lunde, vice president; Henry Marx, treasurer.

Tollefson Against De Luxe Trips for Federal Workers

Rep. Thor C. Tollefson (R-Wash.) is asking for a Congressional investigation of the travel habits of Government personnel. Tollefson says he has been told most "de luxe" class seats on overseas flights are held by Federal employes, while the majority of economy seats are taken by business men flying at their own expense or on expense accounts.

Tollefson requested the probe in a letter to Chairman William L. Dawson (D-Ill.) of the House Government Operations Committee. He said round-trip de luxe fares of $903.40 and economy rates of $478.70 leaves $424.70 in unnecessary cost to be made up by the taxpayer.

Independent Airlines Assn. was quick to extend Tollefson's charge to domestic travel, as well. IAA says DOD figures show that in 1957 Federal employes and servicemen held 858,000 first class airline tickets and only 120,800 air coach tickets. According to IAA, taxpayers could have been saved $7.5 million if these had all been coach fares.

If traveling servicemen were assembled in groups of 15 or more, IAA says even greater savings could be made.

No Grease Pencils to Mark On Jet Engine Hot Section

American Airlines has cautioned its personnel against marking piston and jet engine hot section parts with lead or grease pencils, wax crayons, or anything that will leave a carbon deposit.

Carbon is absorbed by the basic steel material to make a localized spot of brittle, high carbon steel which will crack. Mark with chalk, soapstone or a tag, American says.

Anywhere in the World is an Airfield...

FOR THE 16 PASSENGER

Twin Pioneer

Now fitted with higher-powered Alvis Leonides or Pratt & Whitney R. 1340 engines.

Anywhere, that is, where there's a 100 yards or so of anything like level ground, the Twin Pioneer lands comfortably on that, and takes off from even less. Simply, cheaply — almost sedately — the Twin Pioneer is opening up some of the most difficult territories in the World.

SCOTTISH AVIATION

PRESTWICK AIRPORT • AYRSHIRE SCOTLAND

Telephone: Prestwick 79888.

Circle No. 34 on Reader Service Card.

FLIGHTEX FABRIC

WORLD'S PREMIER AIRPLANE FABRIC

THE DEPENDABLE SOURCE OF SUPPLY

FOR: AIRCRAFT FABRICS • TAPES • ACOUSTICAL INSULATION

FLIGHTEX FABRICS, INC.

93 Worth Street • New York 13, N. Y.

Leading Manufacturers of Fabrics and Tapes for the Aircraft Industry

Circle No. 35 on Reader Service Card.

'Copter Lines Aided

Rate of Return Boost Is Granted by CAB

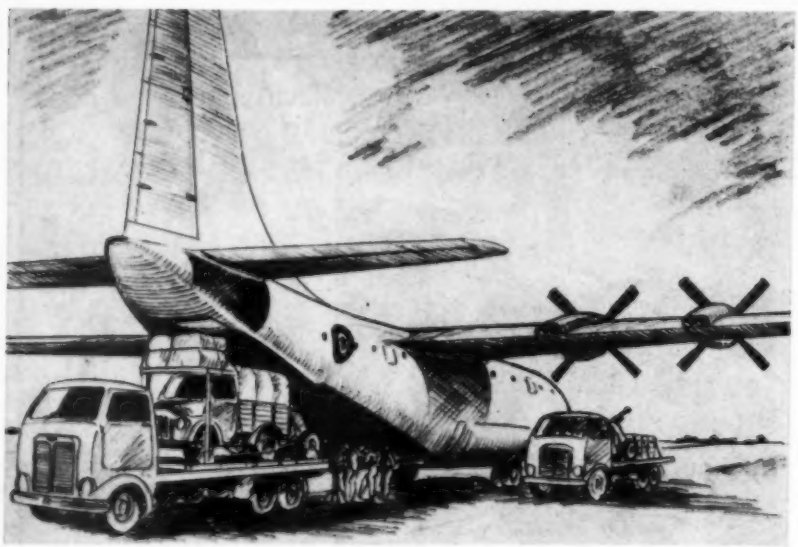
An increase in allowable rate of return on investment from 8% to 9½% has been granted by CAB to three certificated helicopter operators.

In a 3-2 decision in the Chicago Helicopter Airways mail rate case, CAB put the helicopter operators on the same rate of return as the local service lines. The locals' 9½% will apply until final decision in the Board's local service rate of return investigation. CHA, Los Angeles Airways and New York Airways are the three carriers affected.

Members G. Joseph Minetti and Louis J. Hector dissented, stating that helicopter lines are not engaged in big expansion programs as are some local carriers, and adding that this is "but one of the many differences between the two classes of operation."

In the CHA decision, CAB reaffirmed a policy, in mail rate cases, of putting a $15,000 a year limit on legal fees and related expenses of subsidized locals and helicopter lines.

The Board said it intends to set a final future mail rate for CHA of $1,787,811 annually, retroactive to Oct. 1, 1958. It will pay the company $2,932,557 for the period Apr. 6, 1956 to Sept. 30, 1958.



First Specifications Given for Britannic 3

Short Brothers & Harland, Belfast, England aircraft manufacturers, have announced some specifications for their Britannic 3 version of the Bristol Britannia. The Royal Air Force Transport Command has ordered 12 of the long-range freighters at a price reported to be $2.8 million each.

In announcing the preliminary specifications, the manufacturers stated that the prototype is now scheduled to fly in April, 1961 and that the first production models will be due towards the end of the same year. The big plane will have a maximum gross weight of 195,000 pounds.

Britannic 3 Specifications

Dimensions

Span	148' 3.5"
Length	134' 0"
Height	47' 0"
Floor Heights	5' 3"

Weights

Gross Weight	195,000 lbs.
Max. Payload	76,000 lbs.

Range

Range....1,400 plus mi. (75,000 payload, 360 mph cruise)
Range....5,500 mi. (full fuel, 30,000 lbs. payload)
Engines....4 Rolls-Royce Tyne turboprops

Jet Cargoliners for USAF Needs Only Congress Okay

Ten jet cargoliners will be bought by the Air Force during fiscal 1960, if Congress approves the program.

Funds are already available for the purchase. Congress voted money in fiscal 1959, but the Department of Defense would not approve the expenditure by USAF.

Convair, Douglas, Boeing and Lockheed have submitted cargo modification proposals to USAF which would use current jet transports as a basis. Off-the-shelf airplanes would be modified by installation of cargo doors, heavier floors, etc. Attempt is now being made to establish a firm requirement, after which a Source Selection Board will take a look at the various proposals.

Only jets ordered so far by USAF—and not yet delivered—are two Boeing 707s for the White House.

Planes for Sale Will Soon Be on 'Used-Aircraft Lot'

A "used aircraft lot" is to be established at Cheyenne, Wyo., by Land-Air Inc., which will act as agent for General Aircraft & Leasing Co. GALCO is a Washington, D.C. firm headed by Milton Arnold, former president of ATA. Land-Air, a subsidiary of California Eastern Aviation, will store planes and demonstrate them to prospective customers.

First planes on the lot will be 25 DC-7s, purchased by GALCO from American Airlines. Land-Air will inspect and flight-test the aircraft at Tulsa; final delivery and acceptance will be at Ft. Worth, from where they will be flown to Cheyenne. Transfer of all the planes is expected to take six months.

Government to Give Hand In Surplus Plane Sales

The U.S. government is taking a hand in trying to solve the surplus aircraft disposal problem.

Thomas D. O'Keefe has been named to the new post of special assistant to the administrator of Commerce Department's Business and Defense Services Administration to work on problems "of surplus aircraft arising from development and production . . . of turbojet and jet-powered aircraft . . ." O'Keefe has been connected with management engineering and research for the past 36 years.

Expansion Approval Given Aerovias Sud Americana

Substantial expansion of Aerovias Sud Americana's operations, including entry to Miami, extension to Lima, Peru, and authority to carry mail, has been recommended by CAB Chief Examiner F. W. Brown.

The cargo line now operates from Tampa/St. Petersburg to Bogota, Colombia, via Havana; Merida, Mexico; Belize, British Honduras; Guatemala City; San Salvador, El Salvador, and Balboa, C.Z.

Brown's recommendations: property

and mail authority, an a nonsubsidy basis only (1) between coterminals Tampa/St. Petersburg and Miami via Belize, Guatemala City, San Salvador, Tegucigalpa, Managua and San Jose and the terminal Balboa, (2) from Tampa/St. Petersburg and Miami via Havana, Merida and Cozumel, Mexico; Caracas and Maricaibo, Venezuela; Barranquilla, Columbia to Balboa, and (a) beyond Balboa via Medellin, Bogota and Leticia, Colombia; Iquitos, Peru, to Lima, and (b) beyond Balboa via Cali, Colombia; Quito and Guayaquil, Ecuador, to Lima.

Supreme Court Not to Hear Seaboard & Western Appeal

Seaboard & Western Airlines cannot carry transatlantic mail on a nonsubsidy basis under a CAB exemption.

The Supreme Court refused to review an Appeals Court decision which set aside a CAB order granting the exemption. The Appeals Court had stated that the Board's reasons for giving the exemption were "inadequate." S&W has applied for the same mail authority by amendment to its certificate. Examiner's recommendation was favorable.

British-built Power for U.S.-built Jet

First Rolls-Royce Conway turbojet engine is shown being hung on British Overseas Airways Corp. first Boeing 707-420 Intercontinental. The Conway, rated at 17,000 lbs. static thrust, will also power the 707 Intercontinentals ordered by Lufthansia, Air-India International, and Varig Airlines. BOAC has ordered 15 Intercontinentals. Deliveries will begin this year.

AMERICAN AIRLINES
FIRST WITH JETS ACROSS THE U.S.A.

use Strahman SPRAY NOZZLE

FOR SPRAYING DE-ICING AND WASHING FLUID ON PLANES AND MAINTENANCE EQUIPMENT

STRAHMAN NOZZLES ARE DESIGNED TO REACH HARD TO GET AT PLACES

STRAHMAN VALVES, INC.
60 HUDSON STREET NEW YORK 13, U.S.A.

Circle No. 37 on Reader Service Card.

AER LINGUS - IRISH AIR LINES

NOW - 4 SUPERBLY MAINTAINED C-47 DOUGLAS DAKOTAS FOR IMMEDIATE SALE

Maintained in first-class condition. Fully modified to C.A.A. Standards. Replacement doublers and attach angles fitted to centre section and wings. P. & W. 1830—92 Engines. Hamilton Standard 23E50 Props. Toilet. Buffet. 32 passenger seats. Movable bulkhead gives variety of layouts. Full airline radio including V.O.R. and Gee Mk. II.

PRICE ex Dublin Airport "as is" condition $70,000 each for full details cable, write

CHIEF BUYER (TECHNICAL) AER LINGUS DUBLIN AIRPORT
CABLES—AER LINGUS DUBLIN, IRELAND

Circle No. 36 on Reader Service Card.

WEST COAST TALK

By Fred S. Hunter

Pilots on the line, says A. G. Heimerdinger, flight operations manager for the Santa Monica division of the Douglas Aircraft Company, are going to find the DC-8 an easy aircraft to handle. Even easier, perhaps, than the DC-7. Heimerdinger —Heimie for short—heads up the team of test pilots on the DC-8 program and has put in a large number of hours in the left-hand seat in a wide variety of flights to date, including the initial flight of the first airplane and again the first flight of the first JT4 airplane. The DC-8 is a big, heavy jet with a swept wing, but Douglas is coming up with the same characteristics as a straight-wing airplane, Heimerdinger avers, and the harmony between elevator, aileron and rudder is "just what we want."

• **Easy to land**—The DC-8 lands at contact speeds of 115 to 118 knots as compared to 110 knots for the DC-7. Stall characteristics are better than any airplane he has ever flown, Heimerdinger declares. This applies to pitching, lateral control throughout the stall, loss of altitude in the stall. It's a simple matter to keep out of trouble. "You can apply power and fly right out of it." How about handling the DC-8 in landing under instrument conditions? "It's a dream," Heimerdinger replies.

• **Easy to taxi**—Heimerdinger feels airline pilots will get a real thrill maneuvering the DC-8 on the ground. Rear wheels of the bogey gear on the DC-8 are castered, making it possible to turn the big jetliner in a very tight circle. As a matter of fact, Douglas pilots, flying the No. 4 airplane at Long Beach, swing the plane around in 180-degree turns after landing using only one-half of the width of the 200-foot-wide runway just to show how easy it is. Maximum throw of the DC-8 nose wheel is 74½ inches. The rear wheels of the bogey landing gear unlatch and caster when the nose wheel has turned 40 degrees.

• **Easy to take off**—Keeping the DC-8 headed straight down the runway on takeoff will be no strain, says Heimerdinger. For takeoff, the nose wheel is linked to the rudder pedals so that the pilot steers the airplane with his feet instead of the hand wheel used for nose wheel steering in taxiing. Heimerdinger, as a pilot, likes the power response of the Pratt & Whitney jet engines, particularly the JT4. He has not had an opportunity yet to try the Conway, but he has no doubt the Rolls-Royce job will compare favorably with the JT4. The P&W JT3 goes from idle to takeoff power within 10 seconds, Heimerdinger reports. With the JT4, it's 4½ seconds. "The JT4 just follows your hand," says Heimie.

• **Easy to fly**—The Douglas test pilot keeps coming back to the word "comfortable" in describing how he believes airline flight crews will feel in operating the DC-8. In other words, there are no special problems. Heimie confirms Ivar Shogran's report that the DC-8 is completely free of Dutch roll. There are no lateral control problems on takeoff or in landing. Douglas has not yet hooked up a yaw damper on any of the test airplanes and there appears to be no actual need to do so, although the company may finally decide on it for passenger comfort. The DC-8 cockpit has adequate visibility for the entire operation of the airplane in the air or on the ground, Heimie says. He also reports that the air blast rain removal system designed to get away from windshield wipers looks as though it will work out.

• **First commercial delivery**—By the time you read this, unless there is more interference by the weather, Douglas will have flown the first intercontinental DC-8 for Pan American. It will join the flight test program at Edwards AFB. This is the No. 5 airplane in the DC-8 series and the No. 6 and No. 7 planes also are JT4 models for Pan Am scheduled to go into the test program. The No. 7 plane, incidentally, is the one Douglas will use for the accelerated service test program for FAA type certification. This airplane is now in the No. 1 position on the production line and right behind is the airplane which will be the first commercial delivery.

CAB Report & Forecast

Will the Board's new quarters in the swank Universal Building here be a mausoleum? Chairman Durfee raised this question during a talk he made recently to the Aero Club of Washington. His answer—naturally—was a resounding "no." In fact, by bringing all the Washington employes under one roof for the first time, he said, the new building is expected to be "a tool to help cut down delays."

Until now the usual pace of action at the Board has been about that of a funeral procession. Whether the new "togetherness" will speed things up remains to be seen. It must be reported that one of the first effects has been to add a note of confusion. For example: none of the Board's locked files could be opened after they were moved to the new building. The ceilings were so low the locking bars could not be taken out!

• **First public word** on what the Japanese gave in return for their new traffic rights on the West Coast was buried in a recent Board's report to the President on the transpacific route situation. This noted that "agreement has been reached between representatives of the U.S. and Japan . . . as a result, both Pan American and Northwest will now be able to schedule flights between the U.S. gateways and Tokyo without limit as to frequency."

This understanding is not part of the air bilateral amendments recently made public and presumably has been covered in a secret covenant—a device that is being used by the CAB and the State Department with increasing frequency as the air bilaterals become more complex and politically involved.

• **Lower North Atlantic cargo rates,** and a surcharge for jet passengers, are to go into effect April 1—provided the CAB approves. Only indication of the Board's attitude has been the policy statement of last Sept. 23. This said flatly: "It has been the general policy of the Board that fare differentials for particular aircraft types are inconsistent with sound rate-making principles." Even so, odds are about ten to one that the Board will approve the new IATA tariffs.

• **Board shorties**—"Because sufficient funds have not been made available to the Board to provide adequate facilities and personnel to handle the additional workload" the FAA has been requested to continue investigating lightplane accidents . . . after more than 22 years of representing the airline industry, the ATA now is being

challenged by the Board to justify its role as a spokesman for the carriers . . . delay in final submission of United Research's study of the proposed local service subsidy policy is caused by an informal Board request that additional data be collected . . . Board is told it will have nothing to fear from the new $200,000 "legislative oversight" investigation.

. . . Also at CAB

CAB denied **Flying Tiger Line's** application for exemption to operate 10 scheduled cargo roundtrips monthly between San Francisco and Los Angeles on the one hand and Tokyo and Tachikawa, Japan; Manila, Taipei and Hong Kong on the other. CAB said FTL had not established any unusual circumstances justifying an exemption. FTL has also applied for a certificate change to include the route.

Los Angeles Air Service, Quaker City Airways and **Argonaut Airways** applied for temporary supplemental air carrier certificates. CAB said in the Large Irregular Air Carrier Investigation that the three were eligible for certificates, but had applied only for exemptions.

Trans-Texas Airways applied to suspend service on its segment from Brownwood to San Antonio via Brady and Kerrville . . . CAB continued **Frontier's** exemption to operate Phoenix-Albuquerque, serving a minimum of two points as intermediates, and to overfly Safford and Clifton/-Morenci on flights exceeding one roundtrip daily. Exemption will continue for 60 days after CAB decision on FAL application to serve Silver City-Albuquerque and TWA Tucson-Albuquerque application . . . **Delta Air Lines** asked exemption to lease a Convair 880 simulator from Plane Equipment Inc., which is owned by Aviation Financial Services.

Alaska Coastal Airlines applied for $556,501 temporary yearly mail rate, beginning Oct. 1, 1959. Company said it had net operating loss of $68,840 in 1958 after receipt of $466,000 mail pay.

Delta Air Lines applied for extension of its Miami-Detroit route to Toronto, Canada . . . CAB issued a notice that it proposes to require air freight forwarders to submit more detailed information on revenues and expenses and numbers and tonnage of shipments handled. Comments must be submitted by Mar. 27. The Board also changed its economic regulations to provide for more uniform and detailed reporting of financial, operating and other corporate data by forwarders.

THE BULLETIN BOARD

Undisplayed Advertising: $2.00 per line, minimum charge $6.00. Cash with order. Estimate 30 capital letters and spaces per line; 40 small lower-case letters and spaces per line. Add two lines if Box Number is included in lieu of advertiser's name and address. **Displayed Advertising:** $20.00 per column inch. Space units up to full page accepted in this section for classified-type advertising. **Forms close three weeks preceding date of issue.** Address all correspondence to Classified Advertising Department, American Aviation Publications, 1001 Vermont Ave., N.W., Washington 5, D.C.

SERVING THE INDUSTRY AS SUPPLIERS OF DOUGLAS PARTS AND COMPONENTS
FARRAR AVIATION
WE SOLICIT OPEN ACCOUNTS FROM WELL-RATED FIRMS
One of the world's largest inventories of
DOUGLAS
DC-3 & DC-4 PARTS
325 WEST MAIN STREET P. O. BOX 113 ONTARIO, CALIF. YUkon 6-6746 CABLE ADDRESS "FARRAIR"
FARRAR AVIATION WUX
State Dept. Export Reg. No. 4525

AN FITTINGS & HARDWARE

Stainless, Aluminum, Brass, Steel All sizes—immediate delivery from world's largest shelf stock Buy direct from manufacturer. Lower prices quicker service. Send for free wall charts showing complete line of AN & MS fittings and hardware. We machine parts to your own print; also, we sell AN & MS Forgings.

COLLINS ENGINEERING CORPORATION
9050 Washington Blvd., Culver City, California

WANTED: Classified Advertisers seeking direct results. Reach 45,000 interested people through the Bulletin Board of American Aviation. Send your classified message *today* to **AMERICAN AVIATION, 1001 Vermont Ave., N.W., Washington 5, D.C.**

Fast Service and 30 day Approval on all Aviation. Aero. Engrg. & Space Books. **Avia. Pub. Serv., Box 566, Ypsilanti, Mich.**

ARC-1 50ch $110 18S2 Transceivers $300 airline ovhld like new. **Air Flite Supplies, Inc.,** 878 No. Prior Ave., St. Paul, Minn.

AD INDEX

AC Spark Plug Div., General Motors Corp. 15
Agency—D. P. Brother & Co.

Air Cruisers Co., Div., The Garrett Corp. 24
Agency—J. Walter Thompson Co.

Air France 48
Agency—Batten, Barton, Durstine & Osborn, Inc.

Sir W. G. Armstrong Whitworth Aircraft, Ltd. 62
Agency—Dolan Ducker Whitcombe & Stewart Ltd.

Bendix Aviation Corp.
Bendix Products Div. 55
Scintilla Div. 17
Agency—MacManus, John & Adams, Inc.

Boeing Airplane Co. 38, 39
Agency—Calkins & Holden, Inc.

Braniff International Airways, Inc. 10
Agency—Potts Woodbury, Inc.

Bristol Aero Engines, Ltd. 46, 47
Agency—Young & Rubicam, Ltd.

Bulletin Board (Classified) 69

Chance Vought Aircraft, Inc. . . 4
Agency—Tracy-Locke Co., Inc.

CONVAIR, A Div. of General Dynamics Corp. 12
Agency—Lennen & Newell, Inc.

Delta Air Lines 52
Agency—Burke Dowling Adams, Inc.

Flightex Fabrics, Inc. 65
Agency—The Powerad Co.

Goodyear Tire & Rubber Co., Inc. 3
Agency—Kudner Agency, Inc.

Hayes Aircraft Corp. 11
Agency—Silver & Douce Co., Inc.

Holley Carburetor Co. 18
Agency—Clark & Bobertz, Inc.

Irish Air Lines 67
Agency—Foote, Cone & Belding Ltd.

Lear, Inc. 71
Agency—General Advertising Agency

Hotel Lexington 56
Agency—Lubell Adv. Assoc.

Lockheed Aircraft Corp. . . . 8, 9
Agency—Foote, Cone & Belding

Napier Engines, Inc. . . 19, 20, 21, 22
Agency—Erwin Wasey, Ruthrauff & Ryan, Inc.

Narada Hydraulics Corp. 29
Agency—John Mather Lupton Co., Inc.

Erwin Newman Co., Hangar Div. 51
Agency—A. S. Black & Co., Inc.

Northrop Corp. 31
Agency—Edwin Wasey, Ruthrauff & Ryan, Inc.

Puritan Compressed Gas Corp. 56
Agency—Rogers & Smith Adv. Agents

Resistoflex Corp. 61
Agency—Marsteller, Rickard, Gibhardt & Reed, Inc.

Rolls-Royce, Ltd. 32, 33
Agency—The Wesley Assoc., Inc.

Scottish Aviation, Ltd. 65
Agency—Alfred Bates & Son Ltd.

Sinclair Refining Co. 58
Agency—Geyer, Morey, Madden & Ballard, Inc.

Straham Valves, Inc. 67
Agency—Picard Adv., Inc.

Sundstrand Aviation 2
Agency—Howard H. Monk & Assoc., Inc.

Vertol Aircraft Corp. 72
Agency—Gaynor & Ducas, Inc.

Vickers, Inc., Div. of The Sperry Rand Corp. 57
Agency—Witte & Burden

Western Airlines, Inc. 6
Agency—Batten, Barton, Durstine & Osborn, Inc.

Wayne W. Parrish

Two Haircuts in Russia

First Night at the National . . . Better bread, but soggy potatoes

Photo by Wayne W. Parrish

Moscow University has a 36-story tower. Note absence of traffic. WWP's Intourist car for city tour is in foreground.

Room 309 at the National Hotel in Moscow was very much like Room 107 which I had had three years before. There was an entrance hall, a large parlor, large bedroom with two beds, and bathroom.

In the parlor were a fine piano, a very large desk with the usual lamp and green shade, a large table, some paintings, vases and sculpture. But I missed having a big chandelier of the kind I had three years ago, a thing with about fourteen light bulbs on it.

The bathroom was as usual. There was no plug in the bathtub and if you turned on the faucet, the bathtub leaked onto the floor. By using the flexible shower spray, however, there was no leak. There was one small piece of soap. And there was a roll of toilet paper—a considerable improvement because three years ago there were only cut up sheets of paper in cardboard cartons in the four cities I visited. The w. c. had a steady drip at all times, the bidet was inoperative, and the light was poor. Yes, this was certainly the good old National.

But the view from the windows was the best to be found in Moscow. Right across the square was the Kremlin and at night the huge lighted red stars on the towers were a constant reminder of the U.S.S.R. although not quite as weird as they were through the constant snowfall three years ago.

It was late dinnertime when my wife and I checked in. So I introduced her to her first Moscow dinner and it didn't turn out to be a whopping success. Few Moscow dinners are. When we got to the main dining room it was closed off for a private party. Hotel guests were being served in a small room off to the side. During our stay at the National the main room seemed to be closed off about half the time.

You Order, Then Hope

The service hadn't improved. You've got to tip to get results. Waiters and waitresses disappear for long periods of time. The menu is big enough, and in four or five languages, but there's never any guarantee that you'll get what you order. But the same head man of three years ago was there. Only trouble was, as before, he was never around when you wanted him.

I would estimate that the food situation in the hotels has improved about 5% in three years, chiefly attributable to the existence occasionally of a steak. Not a nice New York cut sirloin, mind you, since such things aren't even dreamed about in the Soviet Union, but an acceptable country fried steak.

Beverages are somewhat of a problem. Of course there is no Scotch or bourbon to be had at any price except from friends at the embassy. No gin, either. But there is a fair quality beer. They serve bottles of soft drinks, lemonade, cherry, and so forth, not very good but okay for quenching one's thirst.

This time I had vodka on a number of occasions. It is served by the gram, fairly expensive, but the average tourist has a surplus of coupons anyway for which he has already paid. I must say that I rather got to like the vodka as an aperitif.

SAS Gives A Hand

We tried various wines but I'm not much of a wine fancier to start with. However, through my Scandinavian Airlines friends, I found a very fine dry champagne which to my uncivilized taste was as good as any French champagne I've ever tasted. There is just one brand of this dry champagne available at the better hotels and I recommend it.

I discovered one great improvement in the coupon system. Every tourist buys coupons for hotel, meals, interpreter and transportation before entering the country. But three years ago I was always haggling with somebody over the value of the coupons for meals. Now Intourist has sensibly placed a value on each coupon so you can mix them up to meet your bill. A dinner coupon is worth 30 rubles, supper is 25, breakfast 16, and tea 4, or 75 rubles ($7.50) per day. A lot of confusion is thereby eliminated. If your dinner bill is 45 because of extras, one dinner and one breakfast coupon does the trick.

There are very few fresh vegetables to be had at any time. The discouraging thing about all meals in the U.S.S.R. is the soggy potatoes. They're horrible. So one day I asked the No. 1 Man if they had such things as boiled potatoes. Of course, he said, there were fried, mashed and boiled potatoes. Okay, I said, let's have boiled. So he gave the order to the waitress. Naturally we didn't get boiled potatoes—only the same soggy fried stuff that was almost inedible. Later I had his deputy write out boiled potatoes in Russian on my coupon book so I could show the word to the waitress. Even that didn't work.

But lo and behold, there has been a great improvement in bread. Of course there is always the traditional black bread and it isn't bad. But three years ago the so-called white bread was dark gray and soggy. Now it is a light gray, approaching white, and quite edible. The butter is very pure and very plentiful. But in general the meals are monotonous and the cooking poor. You don't starve, but compared to all the capitals of the world, Moscow rates just about at the bottom in quality.

Next morning I rang the bell in the room for breakfast. A waiter arrived after awhile and the first thing he asked when he came into the room was whether I had any cigarettes. They may have a Communist society with no tipping rules in the U.S.S.R. but those National hotel people catch on fast. Every day it was chocolate bars or cigars or cigarettes or something.

I asked for orange juice but of course there wasn't any, or on any other day, either. I asked for tomato juice and got some, but once was enough—it was very low grade stuff. Then they had a kind of prune juice and I gave up on that. Eggs were of varying quality, but the toast was much better than before. The coffee turned out to be pretty fair, certainly no worse than you get in Europe, but we alternated with our Maxwell House instant packets which we brought with us.

Tourist Business Booms

On that first morning after breakfast my wife and I reported in at the Intourist office to lay out plans and get an interpreter assigned to us. As evidence that tourist business is booming, Intourist now has a much larger room on the ground floor, complete with facilities for exchanging money, a post office, and a souvenir stall.

A young chap who seemed to be the No. 1 chieftain for the office was expecting us. He gave us the remainder of our coupons and we discussed our itinerary which was to take us in a week to Irkutsk in Siberia, and back to Moscow, and thence to Central Asia. He then called over our interpreter.

So we were introduced to Miss Raya Smirnova, a 24-year-old gal who spoke excellent English and turned out to be one of the best among the 100 English-speaking interpreters in the organization. Raya was to be with us for 19 days, something which we considered to be a great benefit and honor, because most tourists are handed on from city to city. Raya traveled with us, at no expense to us, and proved to be an enjoyable companion with a delightful sense of humor.

FIRST CLASS
Permit No. 2455-R
(Sec. 510 P. L. & R.)
Washington, D.C.

BUSINESS REPLY CARD

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY

AMERICAN AVIATION
1001 Vermont Avenue, N.W.
Washington 5, D.C.

FIRST CLASS
Permit No. 2455-R
(Sec. 510 P. L. & R.)
Washington, D.C.

BUSINESS REPLY CARD

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY

AMERICAN AVIATION
1001 Vermont Avenue, N.W.
Washington 5, D.C.

Aircraft Data Cards

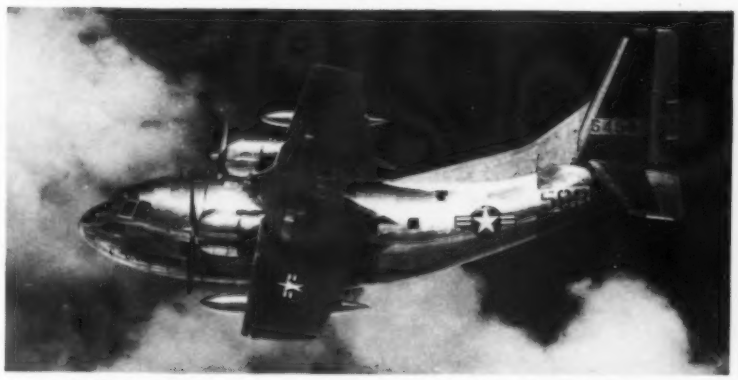
Aircraft selected for this series of data cards are Fairchild's C-123B Provider, Grumman's SA-16A Albatross and Trecker's P.136-L2 Super Gull.

The Provider was designed originally by Chase Aircraft Co. Built in quantity by Fairchild, it is an assault transport currently used by the Air Force.

Grumman's SA-16A amphibian is used by the Air Force, Navy and Coast Guard for search, rescue and utility roles. All current models are scheduled to be modified to SA-16B standard. This entails increasing the wing span to accommodate more fuel and give better performance.

Trecker's P.136-L2 Super Gull is one of two versions being produced jointly by Trecker and Italy's Piaggio and C. It is the only twin-engine executive amphibian now being produced in the U.S.

FAIRCHILD C-123B PROVIDER (USAF)



Aircraft Data Card
March 9, 1959

Copyright 1959
American Aviation Publications, Inc.

GRUMMAN SA-16A ALBATROSS (USAF)

Navy: UF-1
Coast Guard: UF-1G

Aircraft Data Card
March 9, 1959

Copyright 1959
American Aviation Publications, Inc.

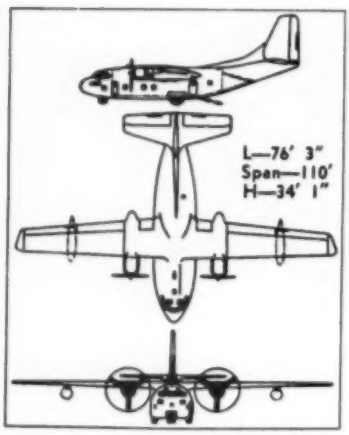
TRECKER P.136-L2 SUPER GULL

Aircraft Data Card
March 9, 1959

Copyright 1959
American Aviation Publications, Inc.

—FOR MORE INFORMATION—

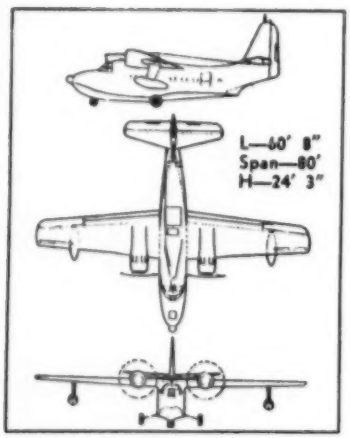
USE THE ATTACHED REPLY CARDS for additional information about any product or service advertised or reported in this issue of AMERICAN AVIATION. Circle the numbers on the card that correspond with numbers appearing beneath items described. Requests will be forwarded to the companies concerned. No additional postage required. →



FAIRCHILD C-123B PROVIDER

TYPE: 60-passenger, twin-engine military assault transport. WEIGHTS: empty—31,620 lbs.; gross—57,800 lbs. POWERPLANTS: (2) Pratt & Whitney R2800-99Ws; rating—2,500 hp. PERFORMANCE: max. speed—240 mph; cruise speed—152 mph; initial rate of climb —1,608 fpm; range—1,090 to 2,420 n.mi. depending on payload; takeoff distance over 50 ft. at gross weight—2,300 ft.; landing distance over 50' obstacle—1,770 ft. MFR: Fairchild Engine & Airplane Corp., Hagerstown, Md.

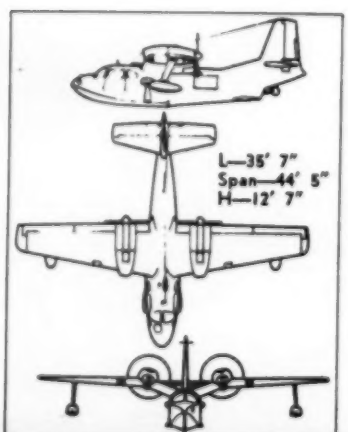
NOTES (for your personal use):



GRUMMAN SA-16A ALBATROSS

TYPE: 10-passenger, twin-engine search and rescue amphibian. WEIGHTS: empty—20,872 lbs.; gross—29,500 lbs. POWERPLANTS: (2) Wright R1820-76As or Bs; rating—1,425 hp. PERFORMANCE: max. speed—242 mph; cruise speed—158 mph; initial rate of climb —1,240 fpm; range—2,200 n.mi. MFR: Grumman Aircraft Engineering Corp., Bethpage, Long Island, N. Y.

NOTES (for your personal use):



TRECKER P.136-L2 SUPER GULL

TYPE: 5-place, twin-engine business amphibian. WEIGHTS: empty—4,630 lbs.; gross —6,614 lbs. POWERPLANTS: (2) Lycoming GSO-480-A1A6s; rating—340 hp each. PERFORMANCE: max. speed—208 mph; cruise speed—184 mph; initial rate of climb—1,279 fpm; range—994 mi.; takeoff distance over 50 ft. obstacle (land)—1,440 ft.; landing distance over 50 ft. obstacle (land)—1,800 ft. MFR: Trecker Aircraft Corp., Milwaukee, Wis. jointly with Piaggio & C., Genoa, Italy.

NOTES (for your personal use):

AMERICAN AVIATION READER SERVICE CA

March 9, 1959

Expires thirty days after above date.

Circle numbers below for information on products, literature, advertisements. Please limit requests to ten items.

1	2	3	4	5	6	7	8	9	10	11	12	13
15	16	17	18	19	20	21	22	23	24	25	26	27
29	30	31	32	33	34	35	36	37	38	39	40	41
43	44	45	46	47	48	49	50	51	52	53	54	55
57	58	59	60	61	62	63	64	65	66	67	68	69
71	72	73	74	75	76	77	78	79	80	81	82	83
85	86	87	88	89	90	91	92	93	94	95	96	97
99	100	101	102	103	104	105	106	107	108	109	110	111
113	114	115	116	117	118	119	120	121	122	123	124	125

name _____

title _____

employer _____

address _____

city _____ zone ____ state ____

For quicker processing please give information requested

Please check the one category that best describes business or occupation:

- ☐ Aircraft Manufacturer
- ☐ Engine Manufacturer
- ☐ Ground Support Mfr.
- ☐ Aircraft Syst., Comp. and Mat. Mfr.
- ☐ U.S. Scheduled Air Carrier
- ☐ U.S. Cargo, Supp. Air Carrier
- ☐ Foreign Air Carrier
- ☐ Bus., Ind. Aircrft. Operator
- ☐ Terminal Airport
- ☐ Fixed Base Ops., Maint. pair, Overhaul and Dis.
- ☐ U.S. Mil. Com. Officer
- ☐ U.S. Mil. Non-Com. Offi
- ☐ U.S. Mil. Civ. Supvr.
- ☐ U.S., Civil Govt.
- ☐ State and Municipal Gov
- ☐ Foreign Govt. (Mil. and
- ☐ Aviation Consulting Firm
- ☐ Aviation Org. and Assn.
- ☐ Educational Institution

Please indicate your primary responsibility:

- ☐ Administrative/Financial
- ☐ Design/Engineering
- ☐ Production
- ☐ Operations/Maint/Ovhl
- ☐ Purchasing/Sales
- ☐ Other _____

( ) I am (am not) now receiving my personal of AMERICAN AVIATION

AMERICAN AVIATION READER SERVICE CA

March 9, 1959

Expires thirty days after above date.

Circle numbers below for information on products, literature, advertisements. Please limit requests to ten items.

1	2	3	4	5	6	7	8	9	10	11	12	13
15	16	17	18	19	20	21	22	23	24	25	26	27
29	30	31	32	33	34	35	36	37	38	39	40	41
43	44	45	46	47	48	49	50	51	52	53	54	55
57	58	59	60	61	62	63	64	65	66	67	68	69
71	72	73	74	75	76	77	78	79	80	81	82	83
85	86	87	88	89	90	91	92	93	94	95	96	97
99	100	101	102	103	104	105	106	107	108	109	110	111
113	114	115	116	117	118	119	120	121	122	123	124	125

name _____

title _____

employer _____

address _____

city _____ zone ____ state ____

For quicker processing please give information requested

Please check the one category that best describes business or occupation:

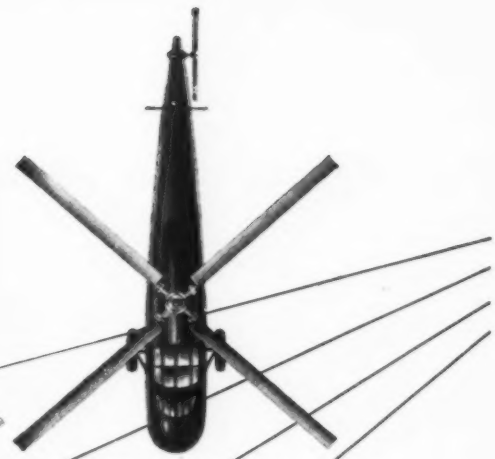
- ☐ Aircraft Manufacturer
- ☐ Engine Manufacturer
- ☐ Ground Support Mfr.
- ☐ Aircraft Syst., Comp. and Mat. Mfr.
- ☐ U.S. Scheduled Air Carrier
- ☐ U.S. Cargo, Supp. Air Carrier
- ☐ Foreign Air Carrier
- ☐ Bus., Ind. Aircrft. Operator
- ☐ Terminal Airport
- ☐ Fixed Base Ops., Maint. pair, Overhaul and Dis.
- ☐ U.S. Mil. Com. Officer
- ☐ U.S. Mil. Non-Com. Offi
- ☐ U.S. Mil. Civ. Supvr.
- ☐ U.S. Civil Govt.
- ☐ State and Municipal Gov
- ☐ Foreign Govt. (Mil. and
- ☐ Aviation Consulting Firm
- ☐ Aviation Org. and Assn.
- ☐ Educational Institution

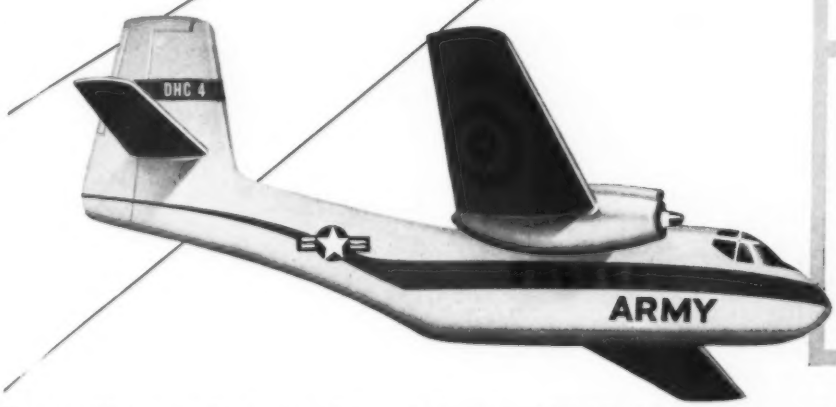
Please indicate your primary responsibility:

- ☐ Administrative/Financial
- ☐ Design/Engineering
- ☐ Production
- ☐ Operations/Maint/Ovhl
- ☐ Purchasing/Sales
- ☐ Other _____

( ) I am (am not) now receiving my personal of AMERICAN AVIATION

FLYING U.S. ARMY specifies LEAR autopilots





FLIGHT CONTROLLER

Compact flight controller contains ON-OFF switch, "push-to-turn" control, pitch and roll trim knobs.

MODE INDICATOR

Simple "push-to-test" lights provide ready reference to autopilot status.

Newest additions to the growing list of Lear Autopilot users are the Army's versatile de Havilland DHC-4 "Caribou" and the Beechcraft L-23 "Bonanza."

Basically the same autopilot as the F-5 which proved its reliability and accuracy in jet fighters, this installation (Army designation ASN-22) in the flying Army's fleet of fixed-wing aircraft is dramatic proof of the system's versatility. The Army has also selected a modified version of the F-5 (Army designation ASN-23) for automatic stabilization of the H-34 "Choctaw" rotary-winged aircraft.

The system weighs less than 70 pounds—lighter by far than any comparable autopilot. It is ruggedized for extremes in environment, operating with equal efficiency in tropical climates, sub-zero cold or extreme altitude. This modification of proven Lear equipment will bring greater utility, higher in-flight efficiency, and greater economy to Army aviation.

For further information or your nearest sales engineering office, write:

LEAR, INCORPORATED, GRAND RAPIDS DIVISION, Dept. AM-118, 110 Ionia Ave., N.W. Grand Rapids 2, Mich.

LEAR

Circle No. 24 on Reader Service Card.

Twin-turbine Army YHC-1 airlifts up to twenty-three troops

The YHC-1 is designed with maintenance in mind. It serves as its own work platform. Easily replaced, packaged components eliminate the need for elaborate facilities and highly-skilled personnel for forward area maintenance.

The Army's new light transport helicopter—the YHC-1—incorporates features which are essential for combat area operations:

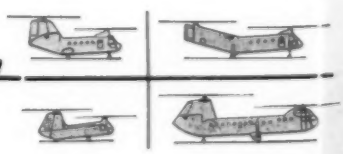
- All-weather, day-night operational capability.
- Ability to land on unprepared sites almost anywhere.
- Suitable for transporting all types of tactical loads.
- Capable of being loaded and unloaded very rapidly.
- Capable of "living" in the field with tactical units.

The YHC-1 is the first of a new generation of multi-turbine powered transport helicopters which will enhance the tactical mobility of Army combat units. In "brush-fire" or "all-out" wars, it provides troops with the ability to disperse in small elements for survival when confronted by area-weapons threat, while retaining the capability of massing quickly for decisive actions.

VERTOL *Aircraft Corporation*

MORTON, PENNSYLVANIA
SUBSIDIARY: ALLIED RESEARCH ASSOCIATES, INC., BOSTON, MASS.

ENGINEERS: JOIN VERTOL'S ADVANCED ENGINEERING TEAM



Circle No. 25 on Reader Service Card.